

# The Australasian MANUFACTURER

SERVING ALL INDUSTRY

Vol. XXXV - No. 1809.

Registered at the G.P.O., Sydney, for  
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Saturday, December 2, 1950.



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AGENTS IN ALL STATES

# AFTER BUSINESS HOURS

## "PAPER, SIR?"

(By L. T. Sardone.)

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

**B**EHIND that familiar street cry there lies a comparatively short, but nevertheless fascinating history. Taken to-day as an essential part of our every-day life—there is now a world circulation of almost 219 million—two centuries ago the daily newspaper in the modern sense was unknown.

In England prior to the 17th Century the dissemination of news was carried out per medium of small daily "news-letters" which were printed and circulated in coffee-rooms, clubs and similar institutions and sent by mail-coach from London to the provinces. Their development was much retarded by the Stamp Act

of 1712, requiring them to carry a government stamp of 1d. a sheet.

The first English national newspaper was the now defunct "Morning Post", founded in 1772. "The Times", at first known as the "Daily Universal Register", followed in 1785 and can now be regarded as the oldest existing newspaper among English-speaking peoples.

However, Denmark claims the oldest national daily which has appeared without interruption since its inception, and which is still owned by the family of its original founder, a young Copenhagen printer, Ernst Henrich Berling.

That newspaper is the country's largest, the conservative "Berlingske Tidende" which on January 3rd, 1949, celebrated its 200th anniversary of continuous publication.

To read the files of such a paper is to read living history. Among other notable events the death of Lord Nelson is recorded, as is the liberation of Denmark. The famous fairy story teller, Hans Anderson, was one of its contributors and a Danish King, Christian VI, used at one time to write its editorials.

Before the War, British newspapers used one and a quarter million tons of newsprint annually; in 1944 they were limited to 350,000 tons. Notwithstanding this restriction, circulations of both daily and weekly papers have increased enormously. The highest in June, 1947, was the "Daily Express", with over 3,800,000, followed closely by the "Daily Mirror" with over 3,700,000; the "News Chronicle" with 1,600,000; the "Daily Telegraph" with just over 1,000,000, and "The Times" with 269,000. The total circulation of the three London evening dailies was 31 million as against the 15½ million of the nine morning papers.

Some other high circulations are the "Paris-Presse-Intransigeant" with 508,000; the three Tokyo morning dailies—"Asahi", "Mainichi", and "Yomiuri", each with more than 3,000,000 a day, and the "New York Daily News" with 2,330,000, and on Sundays 4,476,684.

Australia's first newspaper began in 1831, and the country now possesses fifteen city dailies and many provincials of a tri-weekly, bi-weekly and weekly nature. Circulations vary, of course, but some of the bigger journals show figures as high as 355,000 daily.

Strange to relate, the paper with the "highest circulation" of any in Australia has only a limited number of subscribers. But that is the quaintly humorous boast of the "Adaminaby Advocate", circulating all around the Mount Kosciusko district of New South Wales and published at a higher altitude than any other journal on the continent!

It may also surprise many readers to learn some twenty-five

years back Australia produced the smallest daily in the world. It was the "Daily Pilot", turned out on a small hand-press on Thursday Island, Torres Strait. A single sheet of newsprint, twelve inches by six, it contained, on one side only, shipping information, advertisements, local picture programme and interstate items. Rate of subscription was "one shilling weekly payable in advance or 6d. per single copy."

Little known, too, perhaps, is the fact that newspapers have and are still printed in Australia in the French, Italian, Yugoslavian, Chinese and Hebrew languages, whilst a periodical in Esperanto appears from time to time.

Worthy of mention also is Penell Anakapu, who, as its editor, laboriously prints on a multigraph 200 copies of one of New Guinea's weekly newspapers, the "Papuan Times", entirely in Pidgin-English. Other similar publications for native consumption are the "Rahaul News" and the "Lae Garamut."

On auspicious occasions, extra-large newspaper editions have appeared in Australia; one covering 64 pages and weighing eighteen ounces. But these fade into insignificance alongside the world's largest newspaper and, incidentally, a newsboy's nightmare. On October 30th, 1949, the "Star-Telegram" at Fort Worth, Texas, U.S.A., published a mammoth centennial edition, each copy of which weighed 7 lb. 8 oz.! It contained almost six million words. There were 480 pages of pictures, reading and advertising matter. Advertisements occupied 61,811 inches of space, among them appearing 272 of full-page size. The city's population is 200,000, and one imagines each subscriber got his money's worth at somewhere around 3/6 per copy. The paper's aim was "to tell the world about Texas." With an edition that size, was failure possible?

During the last War Australian troops at home and abroad were well catered for in the way of news, excellently produced army papers being the "Army News" at Darwin; "Table Tops" at North Queensland; "Guinea Gold" in New Guinea, and "A.I.F. News" in

(Turn to page 38.)

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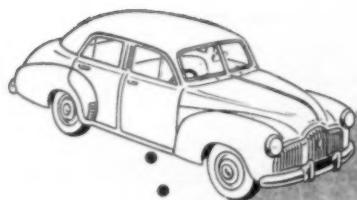
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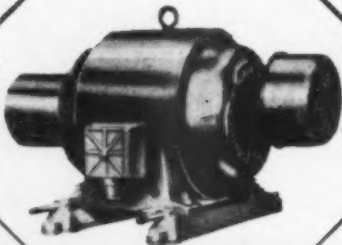
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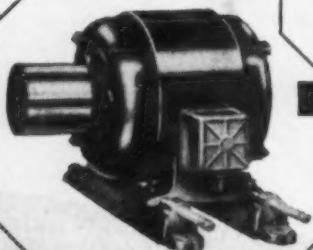
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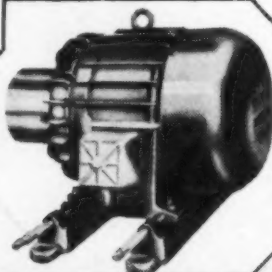




SLIP-RING



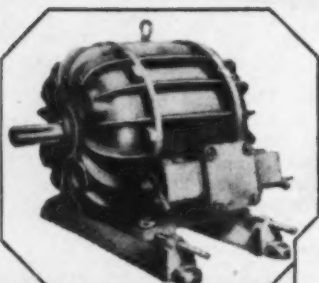
PROTECTED CAGE



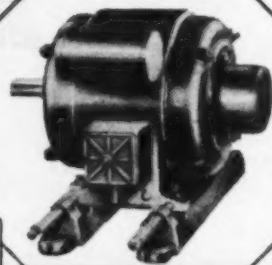
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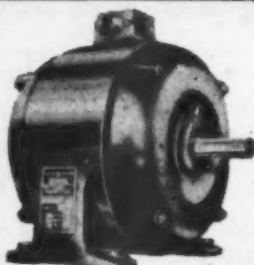
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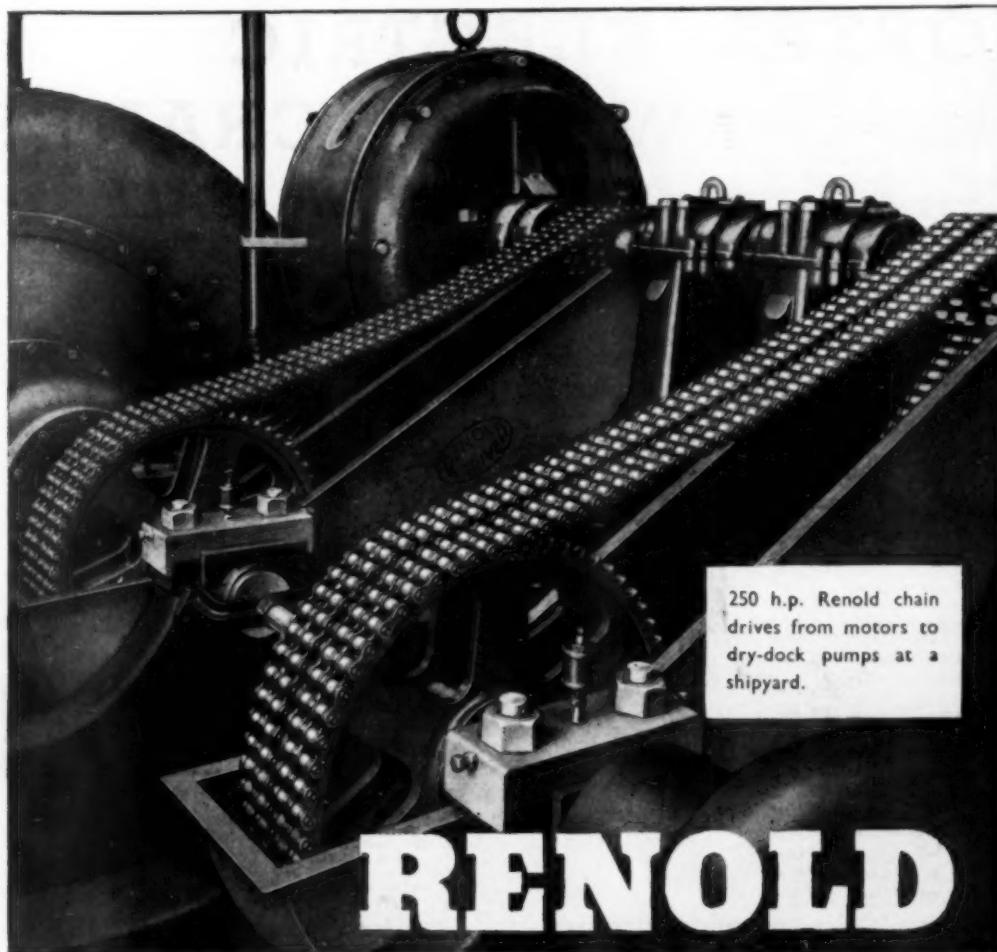
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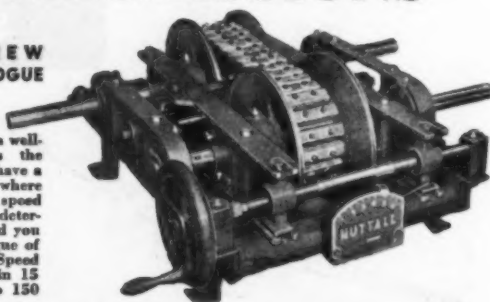
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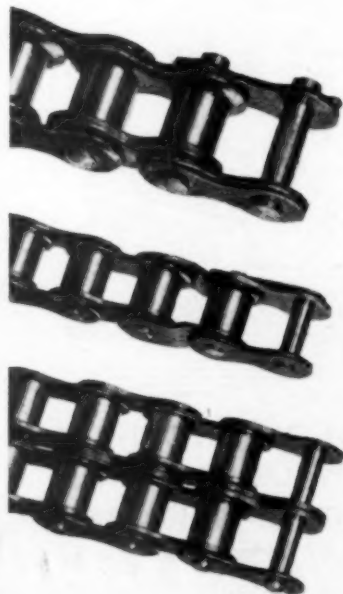
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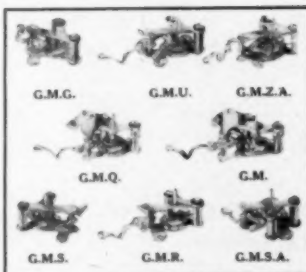
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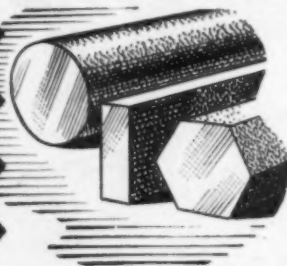
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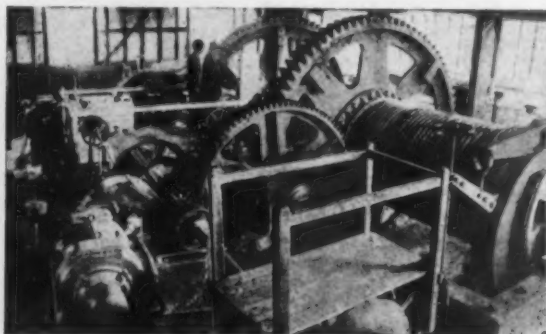


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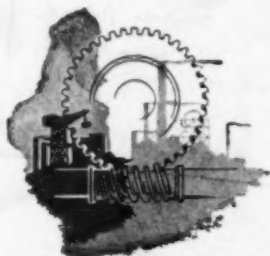
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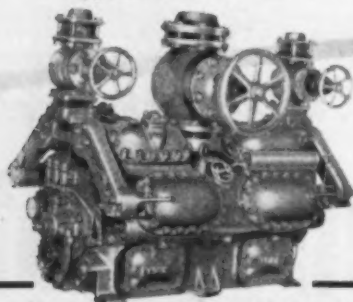
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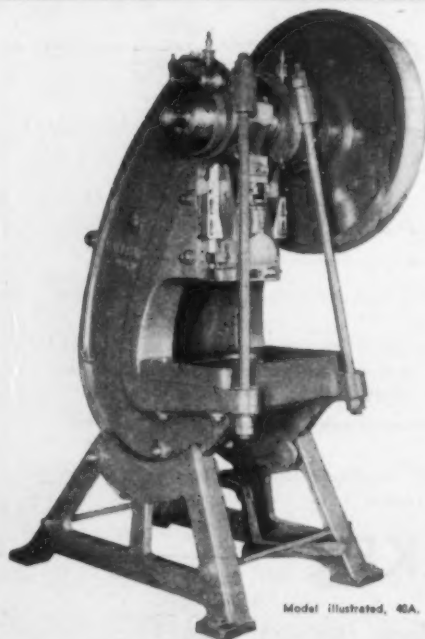
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Maximum diameter and length of coils, 12in. Gauges of wire 11 to 35 S.W.G. Faceplate speeds 50 to 340 r.p.m.

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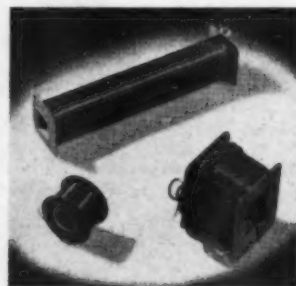
In cast iron and steel. Consists of a slide having tension pulleys for wire, which travels forwards or backwards according to the clockwise or anti-clockwise rotation of the lead screw. The carriage is provided with a differential slide for adjustment without interruption of feed, to compensate any unevenness in the thickness of the wire, to lay wire at a slight angle to the preceding turn, or to obtain a more tightly wound coil. A hand-operated clutch controls the lead screw.

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PAGE NINETEEN

DECEMBER 2, 1950.



## Proposed Excess Profits Tax Would Stultify Industrial Initiative

The Australian manufacturing world views with misgivings the repeatedly announced determination of the Government of the Commonwealth to bring down at an early date a bill to tax excess profits. Such a happening could not be more inopportune, for, at the present juncture, industrial enterprises are faced with rising costs at every turn. Higher basic wage. Higher raw material costs. Higher plant replacement costs. Higher costs of employee amenities. Higher costs along the entire manufacturing front.

**O**BVIOUSLY, the only pool from which higher costs in industry may be met is the pool of profits—profits which constitute the surplus remaining after wages, salaries, raw materials, rent, interest, insurance, and other charges have been met, the margin remaining representing the payment for executive ability.

None surely would deny that executive ability is entitled to high remuneration just as skilled craftsmanship is so entitled. Indeed, even more so. For executive ability benefits not only the individual in particular, but also the community in general. Its remuneration, accordingly, should be proportionate to the service it renders.

Indeed, to single out for special and excessive taxation the profits which are the direct outcome of skill in planning, managing, and in anticipating future trends is to cut off business initiative at its very source. And a nation damming the flow of initiative is a nation doomed to industrial stagnation.

It is good, therefore, to find the Associated Chambers of Manufacturers impressing upon the Federal Government the serious consequences to Australian manufacturing industries inherent in the proposed taxation. It has advanced to the Federal Treasurer, Mr. Fadden, the following five main reasons for opposing the imposition of any such tax levy:—

- (1) It does not provide for an ample and sufficient transfer of funds for plant replacement and for the acquisition of new equipment at much higher cost than ever before and which is now required more frequently than ever before because of the rising tempo of technical change.
- (2) The norm of profit level needs to be much higher than hitherto because of the reduced purchasing power of the dividend in the hands of shareholders. (This aspect seems to be overlooked by many who comment upon average profit levels, for a dividend of 8 or 9 per cent. in 1950 would approximate 5 per cent. in 1940).
- (3) Any corporate tax should in equity be related to funds used in the business, including borrowed money and overdrafts, and not

based on capital or shareholders' funds. This principle is not recognised in the theory of taxation of profits.

- (4) An excess profits tax imposes many inescapable inequities as between companies and industries; presents grave administrative problems and difficulties, both to the entrepreneur and the Treasury, and, at the same time, restricts enterprise and initiative, and it does this particularly in respect of small and growing concerns.
- (5) With the present double taxation, high personal rates of tax and undistributed profits tax, any form of profit tax can contribute in the end but very little to revenue. It thus represents the maximum of work with the minimum of return while imposing a very great burden on productive enterprise.

Each and all of these points constitutes a solid argument against the levying of an excess profits tax. Of special weight is the contention that such a levy would set serious limits to the funds available for plant replacement and plant modernisation, which replacement and modernisation are, especially in to-day's special circumstances, absolutely essential to industrial survival. To limit the proportions of these funds is tantamount to limiting future expansion and development.

As previously emphasised in these columns, taxation of this character strikes a particularly heavy blow at the smaller undertakings which, in their very nature, lack the vast capital resources available to bigger enterprises.

From whatever angle it is viewed, therefore, the proposed tax must be ranked a serious deterrent to the continued expansion of manufacturing enterprise in Australia, stifling, as it would, individual initiative; curtailing plant reserve funds; penalising the smaller undertakings—slowing down the tempo of development at a time when such development is basically essential to the implementation of the immigration programme and the vast national projects being carried out with vigour and enthusiasm by this Commonwealth.



# Pithy Jottings of Industry and Industrialists

## "THE MANUFACTURER" SCORES A CENTURY.

November 25th was a red-letter day in the annals of this journal, for it marked the first occasion on which the pages of one issue reached the century.

This happening is, indeed, symptomatic of the remarkable strides being made by "The Manufacturer" in its campaign of serving the nation's industrial enterprises. Starting with a humble thirty-two pages, it rose to thirty-six, then to forty, and so on till it touched the 92 mark some months back, at which high figure it remained till November 25th.

The splendid measure of success here recorded readily explains the fact that this journal is acclaimed the most important industrial newspaper in the Commonwealth. Proof of the high esteem in which it is held as an advertising medium at home and abroad is furnished by the outstanding array of advertisements which are interspersed liberally throughout its hundred pages.

"The Manufacturer", like the industries it serves, continues to soar to record heights of achievement.

## UNIONISM'S NEW TASK.

In an address to the Melbourne Trades Hall Council, Sir Douglas Copland, Chancellor of the National University, declared that the present-day task of the trade unions is to find ways to increase industry's output. "The trade-union movement," he said, "is going through a great crisis in its history. The crisis is whether the movement rests on its past achievements or goes on to new frontiers to meet new conditions. The task of absorbing the enormous figure of 200,000 migrants a year is a challenge. The fight the trade-union movement has carried out over the last half century for security of employment, income, pensions, and sickness benefits has been won. Now you must go on to new things."

Sir Douglas advocated the setting up of a National Productivity Council to find ways of stepping up production, one of the functions of such a body being the organisation of management and labour committees to work out cost-cutting techniques in major industries.

## MECHANICAL ENGINEERING MANAGER POSITION WANTED

Fully qualified. Soon available. Held major executive positions leading Companies. Requires position of trust with reliable firm. Ring: HARTLEY, Sydney, FX 4916.

This new task confronting unionism was discussed fully in these columns in our issue of November 18th.

## NEW GOODYEAR INDUSTRIAL RUBBER PRODUCTS' SALES MANAGER.

The Goodyear Tyre & Rubber Co. (Australia) Limited has announced that Mr. V. G. Barnden, formerly Manager for Victoria and Tasmania, will take over the duties of Manager of Industrial Rubber Products Sales for Australia. He replaces Mr. G. F. Hawksford.



Mr. V. G. Barnden, who has been appointed Goodyear Industrial Sales Manager.

Mr. Barnden joined Goodyear 20 years ago, although he has been associated with the sale of Goodyear products for 25 years, as for 3 years he worked for Mechanical Supplies Ltd., the Adelaide distributors for Goodyear Industrial Rubber Products.

Mr. Barnden joined Goodyear as a mechanical goods representative in Adelaide in 1930 and later transferred to Victoria in a similar position, where he remained until 1937. During this time, his capacity as a salesman and his technical knowledge of belting and hose problems made him a most welcome caller to users of Industrial Rubber Products.

In 1937, he was made Assistant Manager for Victoria and Tasmania. During the war he was transferred to Perth as Manager for Western Australia, only to return again to take up the appointment of Manager for Victoria and Tasmania.

Mr. Barnden is an Anzac of the first world war, was awarded the Military Cross, and was twice Mentioned in Despatches.

He now takes over the job as chief of all the Goodyear Tech-

nical Men, whose mission is to serve in the endless fight for greater efficiency and economy in Goodyear industrial belting and hose installations throughout Australia.

## NEW ZINC OXIDE FACTORY FOR VICTORIA.

A new factory has been established by Durham Chemicals (Australia) Pty. Ltd., and will shortly be operating at Braybrook, Victoria.

The Company has the advantage of being connected with Durham Chemicals Ltd., of England, and Durham Industries (Canada) Ltd.

The first product of the new factory will be zinc oxide, followed later by a range of other products for the rubber, paint, plastic and allied industries.

Production capacity will now be available in Victoria for a wide range of zinc oxide grades developed in the Durham laboratories and proved by extensive use in Europe, Canada, South Africa and the United States. In addition, special grades have been developed specifically for the Australian market and rigorously tested here over the last 12 months before being made commercially available.

## UNUSUAL DRIVE FOR NEW PADDLE SHIP.

M.V.C. "Coonawarra" recently commissioned by Murray Valley Coaches Limited, provides a story of unusual interest in power transmission. Built for luxury cruises along the Murray from Echuca, "Coonawarra" is a paddle ship 118 feet long with a 28 feet beam. Two Gardner Diesel 60 h.p. engines, one to each paddle wheel, provide both motive power and electricity for the vessel. The unusual part about the drive is the fact that power is transmitted, not through gears as is usual in ships, but by wedge-pole installations designed and installed by Dunlop Rubber (Australia) Limited. Each drive has a centre distance of 80.7 in. and is equipped with 9 section D Wedgropes, the speed of the driving shaft being 600 R.P.M., and the drive shaft 189 R.P.M.

This application of Wedgropes is the first of its type in Australia and is a further instance of the versatility of this type of Dunlop belting.

## CONFERENCE OF MANUFACTURERS.

The 1950 Annual Conference of the Associated Chambers of Manufactures of Australia will be held in Melbourne on December 6th and 7th. The Executive Committee will meet before the General Meeting on Tuesday, December 5th.

## A. FLAVELL BUILDING NEW FACTORY.

A. Flavell Pty. Ltd., of Abbotsford, Vic., makers of Fla-Seal oil and grease containers, automotive and engineering spare parts, is building a modern factory on six acres of land in Sandringham.

Founded in 1910, the firm originally concentrated on jewellery lines, but switched to its present type of output in the last 20 years.

Following the recent investment in the company by J. C. Ludowici and Son, Sydney, the board has been increased to seven by the addition of Messrs. R. E. Ludowici, J. N. Martin and W. E. M. Smith.

They join Messrs. W. A. Flavell, managing director, and R. A. W. J. and J. N. Flavell.

## ENGLISH SERVICE TO AUSTRALIAN MANUFACTURERS.

"The Manufacturer" desires to draw the attention of its readers to the special services being made available to Australian manufacturers by C. H. Hordern and Company, 69 Connaught Street, London, W.2. (Australian office, 472 Bourke Street, Melbourne).

This service consists of the exclusive representation of Australian manufacturers and, based as it is on Mr. C. H. Hordern's personal knowledge of local conditions, is claimed to be particularly effective and efficient in character. It is available on payment of a yearly fee which, obviously, varies according to circumstances and is subject to mutual agreement. We are informed that agencies are not handled for the benefit of the organisation, rather are its activities devoted solely to promoting the interests

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of the companies represented. Manufacturing rights and licensed processes are obtained on a royalty basis or by association with the manufacturers concerned; sole agencies of certain lines are secured—notably those suitable for local assembly and distribution; latest technical data is made available; plant and machinery is purchased; raw materials, such as steel sheet, galvanised iron, plate, stainless steel, and other materials in short supply, are secured; samples and catalogues are readily available.

The service, in short, is virtually equivalent to an individual London office. Manufacturers are invited to write to London for further details.

### LOCAL PRODUCTION OF CHRYSLER CARS

According to reports from Adelaide, the Chrysler Corporation of America is planning to build cars in Australia as completely as possible. As a matter of fact, a statement to this effect was made in South Australia during the past week by Mr. R. S. Thomson, chairman of directors of Chrysler, Dodge, De Soto Distributors Ltd., Adelaide. To this end, the Detroit Corporation suggests the formation of a new company, in which it and the Adelaide organisation will be shareholders.

Developments are being watched with keen interest.

### VAST CHEMICAL INDUSTRY FOR SOUTH GIPPSLAND, VIC.

Plans are in hand for the initiation of an important chemical industry at Gelliondale, in southern Gippsland, by Imperial Chemical Industries of Australia and New Zealand Ltd. The actual work of development may not commence for eighteen months or two

years. Meanwhile, the requisite planning is well advanced. The company is to be granted a lease by the Victorian Government of over 3,000 acres at Gelliondale to mine brown coal, the exploratory boring to determine the extent and site of I.C.I.'s proposed coal-winning operations being carried out by the Mines Department.

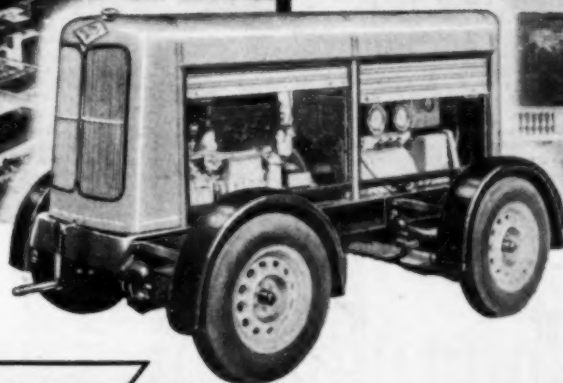
Discussing the project, the Victorian Premier, Mr. McDonald, said recently:—"If this scheme

eventuates, other industries will be established near Gelliondale. Production of chemicals at this centre will increase still further the growing industrial importance of Victoria."

### EASTAUGH CHANGES NAME.

Mascot Underwear Mills Ltd., advises that the change of name from Eastaugh Ltd., was officially approved from November 14.

## In Abadan or Adelaide



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Illustrated is a special Murex 300-400 Amp. Diesel-engine driven arc welding plant constructed for use under extremes of temperature, humidity, altitude, sand-laden air and over rough country. Provided with every essential refinement to ensure good welding under all conditions — ample reserve horsepower and fuel capacity, a specially insulated generator, air filters and oil and water-cooling arrangements. Streamlined design; fitted with sliding steel doors. Specially designed trailer.

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# Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

## Use End Welded Studs to Replace Broken Bolts

### Interesting Application of Nelson Equipment

Replacing welded cap screws, studs or bolts is the maintenance man's bugaboo. Whether the bolt breaks off above or below the surface, the broken portion must be removed, the hole retapped, and a new bolt inserted.

With the Nelson stud welding gun, however, it's a much simpler job. No drilling or tapping is re-

quired. The stud is first cut off flush. The Nelson stud is then end welded directly over the embedded portion of the original bolt. When the bolt breaks off below the surface, the hole is first filled with weld metal before the stud is end welded in position.

The weld joint is said to be stronger than the metal. Con-

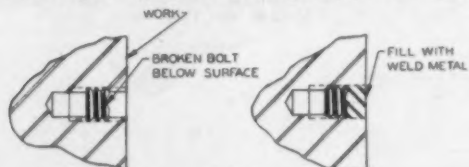


Fig. 1.

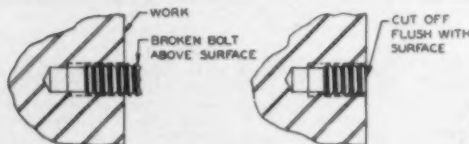


Fig. 2.

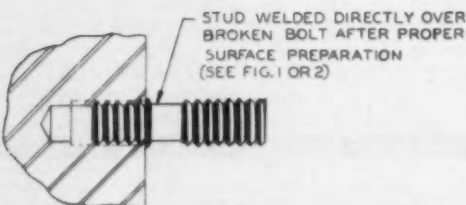


Fig. 3.

quired—the special fluxed stud is simply end welded in place after minor surface preparation.

One manufacturer, the Lincoln Electric Company informs us, has cut his bolt replacement time from 20 minutes to 5 by this method. If a bolt breaks off above the

siderable time is saved, and the lightweight, portable gun makes it easy to replace broken bolts regardless of their location. Further details of the Nelson gun will be supplied by the Lincoln Electric Company (Aust.) Pty. Ltd., of Alexandria, N.S.W.

## Woodworking Machines

### Brisbane Firm's Comprehensive Range

A wide range of saw benches is being produced by Jeffress Bros., manufacturing engineers, of Northgate Road, Northgate, Brisbane.

The trade name—"Jeffwood"—has achieved a solid reputation for quality, efficiency and durability. An examination of some of the woodworking machines manufactured by the firm explains this enviable reputation.

The saw benches are made from 10-inch to 20-inch. The bodies are of solid cast iron construction. The cast iron tables are strongly ribbed and fully machined.

The 14-inch saw bench is typical. Its cast iron table is slotted to take an angling docking slide. The overall size is 31½ inches by 24 inches. The ripping fence is fitted with a quick release and micrometer adjustment, and enables ripping to the centre of 2½ inches. The ripping fence swings to the front of the machine when it is not required. The angling docking slide is adjustable 45 degrees to the right or left and is fitted with an adjustable length gauge. The insertion plate in the centre of the table is easily removable. A saw guard and riving knife are fitted as part of the standard equipment. The machine cuts to a depth of five inches. There are a fixed spindle, 1½ inches in diameter, mounted in ball bearings, and an adjustable motor plate. The drive is by double "B" Vee belts, and a motor pulley is supplied for use on the standard rev. motor (1440 r.p.m.). A minimum of 2 h.p. is recommended. This bench weighs 4 cwt. 2 qr. and is 35 inches in height.

The 14-inch combination saw

bench is designed to take any of the special attachments made by the firm. It has the additional features of a rise and fall saw spindle, quickly adjusted by a hand wheel and locking clamp, and a boring table. The special attachments referred to include a squaring-off attachment, which has all metal fittings, including rollers, rails and guides. A 6-in. belt sanding attachment comprises a heavy cast iron end pedestal, with adjustment for the belt, and two rubberised pulleys. The fittings are all metal. There is also a table sanding and polishing attachment with use in conjunction with the belt sanding attachment.

The "Jeffwood" 14-in. disc sanding attachment is for use with the 14-in. combination saw bench. There are also tilting fence and tool grinding attachments. The 20-in. saw bench is designed for heavier ripping.

Every wood-worker will appreciate the many outstanding features of the 6-in. combination wood turning lathe. It is of cast iron and steel construction, is equipped with ball bearings, and has a three-speed Vee belt drive. The lathe has a 6-ft. bed—4 ft 6 in. between centres. The headstock and tailstock are fitted with No. 2 Morse taper. The standard equipment includes 3-in. and 8-in. "T" rests; 3-in. and 8-in. face plates; driving centre and tail centre; screw centre for face plate work; and motor drive pulley. Attachments obtainable separately include a face turning pedestal and double saddle type 20-in. and 40-in. rests.

Other "Jeffwood" products are panel planers, two-sided planers, vertical spindle moulders, dovetail attachments and swing saws.

## Versatile Small Lathe

A versatile small lathe, designed for use in the engineering, electrical, motor and instruments trade and the home workshop, is now on the market. It is a screw-cutting and back-gear unit, one of the products of Alfred Stewart

Pty. Ltd., of 391 Post Office Place, Melbourne.

It is a compact and exceedingly useful machine. The bed is of the cantilever box type, internally ribbed, designed to secure com-

(Turn to page 24.)

Take a GOOD Look at this



Moulded in Lustrex Ivory Styrene.  
Weight: Lid, 12½oz.; Bottom, 10½oz.  
Measures 14½ x 9 x 2½ inches.

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For use with STEAM up to 860 deg. Fah. at pressures ranging from 450 lbs. to 750 lbs. per square inch.



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FULL PARTICULARS supplied on request

(Continued from page 22.)  
plets accuracy. The headstock is of ample strength to withstand heavy cuts without chatter, and is adjustable for taper turning. Front bearings are 1 1/2 inches in diameter x 1 1/2 inches long, which ensures rigidity. The front and rear bearings are split for adjustment. The spindle is ground to fine limits and bored for No. 2 Morse taper with a milled nose thread of one inch diameter and Whitworth Form. The tailstock is of the setover, quick-locking type for taper turning and is clamped to the bed by lever operation to eliminate the use of spanners. The spindle diameter is one inch No. 1 Morse taper and is bored right through.

The unit's compound slide-rest has top slide, adjustable to any angle and the cross slide is in the form of a T-slotted table. For operations such as boring, milling, key-cutting, slotting, sawmilling, etc., the work can be bolted to this table. There is micrometer adjustment. The saddle is traversed on the bed by rack and pinion motion. The hand-wheel is geared to give slow and sensitive feed. The wear-resistant double half nuts for screw-

cutting have a large bearing surface and are cam operated. They are rigidly pivoted to the apron to secure precision in thread-cutting. A revolving dial, fitted to the saddle, indicates to the operator the correct engaging of the leadcrew and so going a long way toward simplifying screw-

A new kind of coating for metal parts has recently become available to Australian manufacturers. One of its interesting features is that the coating exudes a film of pure lubricating oil which gives additional protection from corrosion.

It is of invaluable benefit for safeguarding machine tools, precision gauges, machined surfaces of shafts, complete assemblies, camshafts, connecting rods, gears, intake and exhaust valves, etc.

The Navy, aircraft manufacturers and many large industries have already approved samples and ordered large quantities.

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cutting. The back gear is enclosed by a guard and is lever operated. There is a three-speed countershaft, designed for an electric motor and to fit A section V belts, and adjustable for belt tension.

More details of the unit will be supplied by the makers to interested manufacturers.

.08 inch is applied when the article is dipped at 190 degrees. It gives 100 per cent. protection in hot, humid atmospheres or in extremes of cold. The inner container of the tank may be made of stainless steel, aluminium or vitreous enamel.

The dipping operation takes only a few seconds. "Gloscoat" is thermoplastic and sets almost immediately.

The light-coloured, transparent coating, it is said, enhances the sales appeal of the coated article. For example, gauges are visible to the customer and can be handled freely without the danger of corrosion from the moisture of the fingers. The high impact resistance of the coating safeguards against accidental damage through dropping.

"Gloscoat" is as simple to remove as it is to apply. It just peels off, leaving the article smoothly covered with a film of oil. The removed coating can be re-melted repeatedly for further use.

Another important factor, especially for air freight, is that the coating reduces the bulk of packages. Parts coated are ready for immediate use, as no degreasing is necessary.

## Protection from Corrosion

### This Protective Coating Exudes Oil

The product known as "Gloscoat" is handled by British Optical Co. Pty. Ltd. of Wingello House, Angel Place, Sydney.

This coating also gives protection against damage during transit and storage. It is claimed to reduce packing time by 60 per cent. in man-hours.

"Gloscoat" is applied simply by dipping the article in a tank, which is specially designed. A temperature of 185 to 200 degrees Centigrade is recommended. The thickness of coat can be varied to suit individual requirements. The average coat thickness of about



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405 Collins Street, MELBOURNE, VICTORIA. Phone: MU 3956.

Agents—S.A.: Gilbert Lodge & Co. Ltd., cnr. Morphett and Franklin Streets, ADELAIDE.  
W.A.: Western Machinery Co. Pty. Ltd., 494 Murray Street, PERTH. Phone: BA 2495.

"Gloscoat" has a tensile strength of a minimum 450 lbs. per square inch. It shows no appreciable change in toughness, even after it has been continu-

ously heated for more than 50 hours at 190 degrees.

The agents welcome inquiries regarding this material from interested manufacturers.

## From Small Beginnings

### Many Firms Had Lowly Starts

There are many industrial undertakings that have had romantic and intriguing beginnings associated with them. But while the stories surrounding them have had countless tellings and there are many more which could be told, the industrialist, generally, strictly avoids being drawn into a discussion on them mainly from the attitude that his conferees or associates might consider him as using it as a means of publicity or limelight in some way.

Many of these stories are of achievement and the over-coming of apparently unsurmountable difficulties and frequently underlie the determination and tenacity of men facing great odds. Take for instance the problem that faced a firm, then only in its embryo stage in Melbourne during the early days of the last war.

There were five men labouring in a tiny factory in the suburbs. They comprised at that time of man-power shortages, the Metallic Bellows Pty. Ltd., of which Mr.

Ernest A. Austin was managing director. They had started on the manufacture of metallic bellows "from scratch." There were no blue-prints and but meagre data from which to guide them, and the problems of design and metallurgy had but just begun to overcome their difficulties, when the Commonwealth Government called on them to make bellows for aircraft.

The five men fought the problems in the only way they had at their disposal—ingenuity and application. In 1941 they handed over to the authorities the first half dozen bellows for Wirraways.

Orders in wartime, as every manufacturer knows, were orders—demands that knew no refusal. So it was with something of alarm when the five men were told they must produce at once a small, but vital part for an American warship's oil burning apparatus.

The U.S. Astoria, badly burned up in the Coral Sea battle, had come to Sydney for repairs. The naval authorities were brutally frank. "We want those parts in three days," they told the five

men. But the little firm had no stocks of the special steel required. The Navy got them some.

"All they sent us was one of the burned-out bits of equipment" said Mr. Austin, recounting the story. "We had nothing else to help us. They wanted about half a dozen of these parts. Without them the whole oil burning system of the cruiser would have been useless. We just set to work and eventually, by trial and error, managed to give them just what they wanted. We worked most of the three days and nights and we offered up a prayer of thankfulness when we were told the

authorities were more than satisfied with the job."

But while Mr. Austin had to be drawn to some length to disclose that little highlight on wartime expediency, it was indicative of the determination and the skill of him and his four companions to successfully overcome a hurdle. And the success that attended that effort was but another episode in the beginning of a firm that was to expand into a large and progressive and efficient industrial instrument business—housed to-day in a bright and spacious factory out at Essendon—Wilcolator (Australia) Ltd.

## Precision Dovetailing Machines

The furniture manufacturing industry should be particularly interested in the Vial precision dovetailing machine. It follows the popular single spindle radial arm type for those who need a robust tool, capable of standing up to hard and constant usage. Incorporated in its design are instantaneous acting clamps and simple stop and length adjustments, designed for the purpose of saving man-hours. The machine will dovetail timber from 1 in. thick to 11 in. and will take timber up to 14 in. wide, by any length, and so covering the range required by cabinet makers. Of simple, yet rugged construction, it incorporates these items: Ball race spindle speeds to 10,000 revolu-

tions a minute; adjustable cone race knuckle joint; positive locking eccentric adjustment; variable dovetail height adjustment for tight and loose fit; fine thread adjusting end stops and pressure grease nipple.

Two sections of a drawer or box are dovetailed together by this machine. The drawer front is inserted under the top clamp and the drawer side is placed under the front clamp. The drawer front is butted against the drawer side and the clamps engaged. The cut is taken, the timber released, reversed and fitted together.

Full particulars of the machine may be had from Frank Vial and Sons Pty. Ltd., 369 Queen Street, Melbourne.

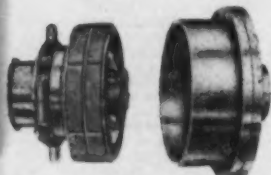


YOU WANT TO KNOW . . . and the editors will gladly tell you . . . more about the inventions, materials, and processes mentioned on this page. Write to Box 1697, G.P.O., SYDNEY, enclosing a stamped, self-addressed envelope.

## New Friction Clutch Coupling With Swimming Friction Ring

An interesting new construction in the field of coupling is the coaxially operating friction clutch coupling, illustrated. Its main feature—besides its simple construction—is a symmetrical double key-ring which loosely swims between wedge-shaped discs. The single segments of the key-ring are concentrically held together by a soft drawing spring which catches into a radial deepening of

way necessary due to the fact that the friction clutch coupling automatically engages the two ends of the shaft. An axial shifting of the driving or driven shaft is equally impossible because the coupling part when not engaged can move in the cylindrical boring of the coupling casing like a



The new friction clutch coupling.

the ring segments. When engaging the coupling the switching power glides from the hand-lever or rackholder along the friction-ring, the switching-sleeve and several equally located toggle levers to the wedge-shaped disc and disengages an axial movement of the disc in the direction of the wedged friction-ring. This one equally glides regularly outwards along the flanks of the discs, until the friction comes to an end, as well on the wedged broad side of the friction-ring and of the cylindrical inside surface of the coupling casing as along the flanks of the friction-ring and of the discs. The friction ring is manufactured from a material which resists to the heaviest wear and tear. All measures are provided for in a way which—coupling being engaged—secures that all friction surfaces when being in closed friction are in the specific sense equally charged. Special shaft contrivances are in no

way necessary due to the fact that the friction clutch coupling automatically engages the two ends of the shaft. An axial shifting of the driving or driven shaft is equally impossible because the coupling part when not engaged can move in the cylindrical boring of the coupling casing like a

Hitherto, transferring the soiled oil from sump to collecting vessel or purifier has often proved difficult. The mechanical pumps used for the purpose tend to get damaged by the liquid's metal content, so that breakdowns are frequent, and maintenance or replacement costs high.

An entirely new approach con-

## Cutting Oil Reclamation Equipment

platon. This friction clutch coupling will prove especially suitable as an installation agent, because the coupling casing with its cylindrical boring is a simple rotary-piece and therefore easily adaptable to different constructions and needs, e.g., it can be manufactured out of one piece together with the engine-agent asked for. Special constructions comprise the installation of an elastic inside ring and the manufacturing of a double- or safety clutch. [2632].

slats, fundamentally, in substituting an air, for a mechanical pump. This principle is embodied in a new self-contained unit.

The unit's largest component is a cylinder tank with a capacity of 80 gallons. Connected to this is an electrically driven air pump, which under normal circumstances creates a vacuum, and, in reverse, positive pressure inside the cylinder. It is thus possible either to withdraw oil from sumps, or to discharge it from the tank to a reasonable height.

The unit, complete with control equipment and attachments, is mounted on swivelling rubber-tired wheels to make movement swift and easy. [2605].

## Rising and Falling Spindle Saw Bench

A British firm recently introduced the rising and falling spindle saw bench, here illustrated, which is primarily designed for cutting plastic materials and metals such as lead alloys and thin brass and copper sections. Three high-speed steel or carbide-tipped trimming knives can be fitted into the saw arbor for taking a light cut on the sawn edges of metal work-

pieces to produce a good finish.

The 7-in. diameter carbide-tipped saw rotates at 3,500 r.p.m., and is driven by a 1-h.p. motor through double V-belts. The saw head is raised and lowered by means of a jack screw and crank handle, the latter being provided with a dial graduated to 0.010 in.

The 27-in. by 22-in. table has a moving section measuring 21 in. by 13 in., which is mounted on

steel balls running in hardened ways. A detachable, 13-in. capacity, slide gauge, incorporating an adjustable back stop, enables workpieces to be cut to predetermined lengths. The back stop is adjusted by means of a screw which carries a barrel-shaped knob provided with graduations reading to 0.010 in., while a quick release nut permits approximate settings to be rapidly made.

A 7-in. capacity adjustable toggle clamp is provided for holding the work against the face of



Saw bench for plastics and metals.

the slide gauge during operation. A 22-in. capacity slide gauge having an extension support table is also available, and in addition there is an adjustable front stop.

By means of attachments provided, 45-deg. bevels can be machined on the edges of workpieces, and right- and left-hand mitring operations performed, while a further attachment permits cuts to be made at any angle from 2 to 68 deg. These attachments are used in conjunction with the standard slide gauge, and for producing angular faces on larger work a swivel slide gauge of 22 in. capacity, with an extension table, is available.

A chip disposal trolley, fitted with a collapsible handle, is housed in the base of the machine. A transparent guard of toughened glass and a lighting unit are also fitted as standard equipment.

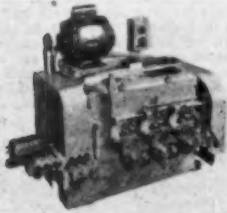
The machine, which can be supplied with the various scales graduated in the inch or metric systems, occupies a floor space of 32 in. by 32 in. and weighs approximately 5½ cwt.

A steel cabinet containing a drawer for machine accessories, and 24 compartments to accommodate strip material up to 19 in. long, can be provided if required. [2650].

## Automatic Cutting-off Machines

We illustrate on this page, one of two sizes of automatic measuring and cutting-off machines, which are capable of handling very rapidly such materials as wires, strip and thin-walled tubes, one operator being capable of looking after two or more machines simultaneously.

The type W3 machine shown is arranged for bench mounting, and by means of change gears will accurately cut any length from



Automatic Cutting-off Machine.

1 in. to 50 in. at feeding speeds up to 80 ft. per minute. It is driven by a push-button controlled, 1 h.p. motor, and is fitted with three pairs of geared feed rolls and a rotating fly-wheel which carries eight cut-off knives of high-grade tool steel. A straightening roll unit, for use with stiff materials, can be fitted, as shown on the left in the illustration, also a totalizing counter and a counter which can be preset according to the number of pieces required to be cut. The bench space occupied by the machine is 40 by 22 in.

The type W5 machine is of similar design but is capable of dealing with heavier gauge materials, and is arranged on a stand for floor mounting. The material can be cut to any length from 1 to 40 in., or alternatively 6 to 144 in., and the feeding speed is steplessly variable up to a maximum of 100 ft. per minute. The machine is driven by a 1 h.p. motor and the space occupied is 30 by 24 in. [2651].



...should have  
been bored 1<sup>3</sup>/<sub>16</sub>"

*Reject*

It took experience, time, labour and material to produce this piece of "scrap"—good for nothing except salvage, because the operator made the hole a little too large. Whose fault? The clerk who misread a 3 for a 5—or the management who are trying to control modern production with out-of-date methods? Reliance upon typed or hand-written copies of vital production data is only one degree better than relying on individual memory. To-day's production demands a system that is always accurate—automatically.

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## New Type Hand Milling Machine

Primarily designed for milling and slotting small parts in brass, aluminium and similar materials the hand-operated milling machine illustrated is suitable for second operation work on automatic and capstan produced parts. Light cuts and deburring operations can be carried out on cast-iron and steel components.

This machine can be adapted for fitting circular milling cutters, slitting saws, end mills and small form cutters.

Specially designed standard fixtures are available, and can be

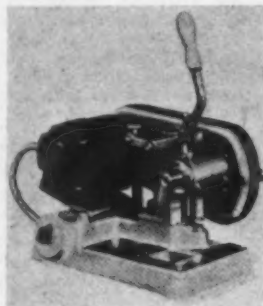
a vertical slide, with adjustable limit stops at top and bottom. A hand screw is provided for locking the spindle in any position. An adjustable gib is fitted.

Drive is from a 1 h.p. squirrel cage induction motor, which can be supplied to suit different voltages and speeds. The speeds can be varied by altering the pulleys. Standard equipment is one set of pulleys 11 in. and 4 in. dia., giving spindle speeds of 890 and 2,280 r.p.m., with a motor speed of 1,425 r.p.m.

Operation is by means of a lever which moves the housing up and down the vertical slide. The lever is counter-balanced by an adjustable spring mechanism. An independent spring mechanism is also provided for the motor carrier.

Cutter guards are mounted on the bearing cover. A special shield for end mills can be supplied. V-belts and pulleys are also guarded, and a chip pan is available.

Standard fixtures are a sliding work-table, a transverse sliding table, a collet fixture with 1/2 in. dia. capacity, and a fixture plate on which the collet is mounted. [2652].



Second operation work on capstan and automatic produced parts in brass, aluminium and similar materials can be readily carried out with this hand milling machine.

readily mounted on keyways provided in the machined base.

The nickel-chrome steel spindle is mounted in Timken roller bearings, and has a 1/2 in. dia. hole in the end for cutters with suitable shanks. Adapters are available for circular saws and cutters. Spindle housing travels on

## Protecting Foodstuffs by X-Rays

Applied physics and design engineering now provide safer foodstuffs. To-day much of the food eaten everywhere is industrially processed. During manufacture, the various ingredients, often originating from distant countries, can inadvertently pick up a "foreign body." This minute piece of metal, rubber, stone or glass may lead, when the food is eaten, to a broken tooth or serious health injury.



To forestall such accidents, foodstuffs are closely inspected. One method is the "sampling" technique. A proportion of total output, mathematically calculated by the law of averages, is broken up and minutely examined for potentially dangerous inclusions. This technique is destructive, slow, and accurate only to a degree.

A non-destructive, speedy and wholly accurate examination procedure has been evolved and proved in use. The basis is X-rays in an application designed to function at the tempo of mass-production output.

Each installation has to be modified to suit the substance under examination. The underlying principles are, however, everywhere the same. An X-ray system is devised which projects onto a fluorescent screen an image representing the largest possible area of the test piece. If any foreign body is present, the uniform image is marked by a darker area. The inspector, by means of a trigger mechanism rejects the spoiled sample.

Two concrete instances typify the procedure's efficiency. Pieces of glass only .125 in. (.3 cm.) in diameter were easily detected in bread 8 in. (18.2 cm.) thick. Biscuits were examined at an hourly rate of 8,000 packages. Comparable results are obtainable with bar chocolate, frozen meat, cereal products, and so on. [2516].

## Protecting Fluorescent Light Fittings

Applied metallurgy and insulation give surer industrial lighting. Fluorescent light sources, which won their first successes in industry, have encountered during their rapidly expanding adoption there, certain inimical conditions, such as dust and corrosive vapours.

These agents are particularly dangerous to fluorescent lighting installations, because, in effect, each unit is controlled by two switches, one of the usual type for turning on the current, and another highly specialised actuating switch which actually lights the lamp. Its sensitive components are frequently damaged by dust or moisture which gains access, e.g., through the lamp-ends and lampholders.

To prevent the time-loss involved in replacing or repairing the broken-down units, dust and vapour-proof fittings have been developed.

One basic design is modified to meet the two purposes. A specially tough but light alloy has been selected for the fitting which houses the actuating switch, the lamp-ends and lampholders. Provision has been made for various types of connection to mains, but in each a water-tight sealing gland excludes all moisture. Heavy gauge tubes,

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sealed at each junction, carry wiring from actuating switch to lamp.

The dust-proof model is sealed with felt gaskets. It is particularly suited for use in textile manufacture, collieries, cement factories, tile-making works, flour

mills, etc. In the vapour-proof model, appropriate for dairies, farm buildings, laundries, dye-houses and certain industries with moderate concentrations of acid or alkaline vapour, sealing is by washers fabricated from a special silicone plastic. [2522].

## Powder Cutting of Metals

Applied physics has extended the range of metal cutting by oxygen jet. This technique, now some 50 years old, has always had certain limitations. Numerous metals combine with oxygen to form on their surface compounds, the melting point of which is higher than that of the metal itself. The practical consequence is that the metal cannot be oxygen-cut at all, or only badly cut. Among these intractable materials are high-alloy (including stainless) steels and certain non-ferrous metals.

Some of them can now be dealt with by a new process, and with equipment evolved by a British firm, concurrently with analogous American developments.

The innovation in the process is the adaptation to modern technology of facts known since 1911, namely, that the cutting jet's heat can be reinforced by burning an appropriate metal in it. This raised temperature removes the resistant compound and exposes clean metal for precise cutting.

The process works as follows with stainless steel containing chromium and nickel. Finely-divided iron powder (chosen both for cheapness and safety—its combustion gives rise to no noxious fumes) is carried in a stream of compressed air through normal oxygen cutting equipment. A special attachment fitted to the nozzle injects the iron powder through the heating flame into the cutting oxygen stream.

The chromium in the stainless steel forms a highly resistant oxide. The iron powder in combustion provides enough heat to melt the film and remove it. Excellent cuts are obtained at good speeds, e.g., some 400 man-hours recently were saved in the fabrication of a stainless steel filter drum.

The process works with many alloy steels, and development work is proceeding to adapt it to non-ferrous metals. [2635].

## Universal Locating Base for Bench or Machine

There has recently been introduced the universal locating base here illustrated. It has been designed to provide a rigid work holding device which can be secured to a bench or machine and readily set to present the work to the operator in the most



Universal Locating Base.

convenient position. It comprises a fabricated steel base carrying a cast iron, hard chromium-plated ball member, which suitably is located in a socket, and can be locked in the desired position by means of a hand lever. Provision is made on the ball member for mounting a 9-in. square table and various other attachments which enable a variety of operations to be performed. It is stated that a dead load of 1 cwt. may be suspended at a distance of 18 in. from the locator without movement of the ball. [2643].

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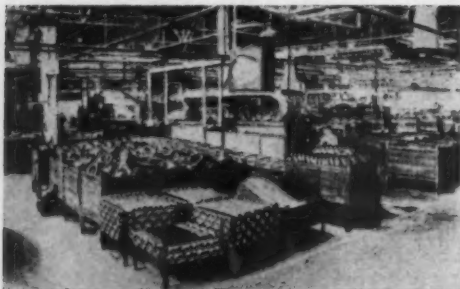
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Material banks have to be established when equipment is used to process a miscellaneous range of components. Here material is waiting to be put through a washing machine. Interruptions in the flow of production increase inventory costs.



Rotary table is used to feed material to the machine at the most convenient position for the operator. While one stack of material is being used, another has been loaded on the table ready to follow on when the operator revolves the table. In this way the tempo of the production process is maintained.

## Shorten the Factory Pipe-Line

### Good Materials Handling Means More Production\*

Some managements, who are normally progressive and well informed, are late, and in some instances reluctant in recognizing that the planning of materials handling is primarily the responsibility of the production planning engineer. Since the war, managements are showing a greater concern about their high inventory figures, without always appreciating that the methods of production virtually determine the amount of material that is necessary to fill the factory pipe-line. So often the un-informed are apt to relate materials handling only to stores and warehousing and the inter-departmental movement between the various producing areas. Although this aspect is of vital importance and of major proportions, materials handling has a vastly greater field to cover than this. In many instances it starts in the factory of the supplier of the raw material and ends only when the product is in the hands of the customer. It aims at a streamlined flow of productive material through the plant; it is conscious of the physiological limitations of the operator and should assist in the creation of safe working conditions. It is deeply concerned in how a part is processed and the number of times the production operator physically handles it during the various stages of the productive operations.

THE evils of an inflated inventory are too well known, without my labouring the point. But how often do we find that savings obtained by the supply department through buying ahead of schedule in order to reap the benefits of a favourable market, have been offset by the additional cost of storage, with its attendant high materials handling charges. One very large firm contemplated

the allocation of a separate warehouse to accommodate material overflow in order to prevent silting up the factory pipe-line with excess stocks. They proposed to debit the supply department with the cost of storage against each purchased item. The responsible authority predicted that the warehouse would be empty in less than twelve months. It is a fundamental of good business to establish the most rapid turnover of stocks in order to get the greatest return of invested capital.

No matter how well planned the materials handling technique is, it will inevitably fail if, through the lack of adequate material and production control systems, the material pipe-line becomes silted up. In these days of continual striving for higher output at less

unit cost, it is well to remember that this is best achieved by accelerating the flow of work

through the plant. Good planning accomplishes this by better production techniques, keener control

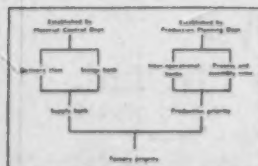


Fig. 1. Main elements which determine the quantity of material in the factory pipe-line are shown in this diagram, together with the relationships between them. In subsequent diagrams the supply and production aspects are dealt with separately.

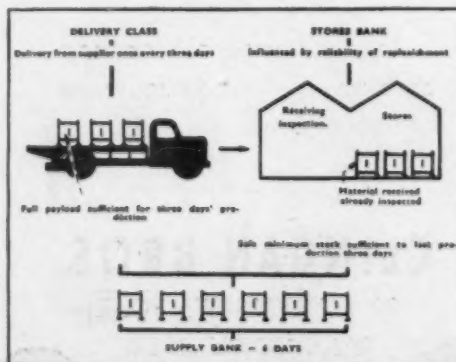


Fig. 2. Supply banks in a case where the material is inspected at the supplier's works before delivery, consists of safe minimum stock in the stores, plus the full payload of the delivery vehicle. In this and subsequent diagrams figures on the symbolic post-palates indicate contents in terms of production requirements in days. Supply bank in this case is therefore six days' requirements.

\*Presented by the author, H. P. Mott, to the Materials Handling Conference of the Western Section of the Institution of Production Engineers, and reprinted from "The Machinist."

systems and a fuller understanding of the needs of materials handling. Certainly not by a method that both builds up the operating personnel and increases the "in process" material banks to a degree where the material pipe-line becomes clogged. The method of production is related to the amount of stock carried. It is purely a question of economics when a decision has to be made on the advisability or otherwise of installing a machine or a piece of productive equipment in order to eliminate a bank of "in process" material. For instance, the productive capacity of a single machine may be such that in order to utilize it to the full, more than one type of component has to be produced on it. Immediately this is done, an interruption of the material flow has been caused.

This means that banks of material whose quantity is in exact proportion to the period of interruption have to be established. The cost of these banks of "in process" material, plus the cost of handling equipment and floor space necessary to contain the bank and the handling time involved could in some instances outweigh the cost of an additional machine, especially when amortized over a ten-year period. If banks of material are established, then handling and inventory costs are inevitably increased.

#### CONVEYOR v. UNIT LOAD.

Where flow production is achieved the conveyor can be a most economical materials handling tool, but where it is interrupted the unit load will inevitably come into its own. There is no doubt that when a conveyor can be conveniently loaded by an operator with something he has produced, immediately he produces it, and it can be conveniently unloaded by an operator who needs the part, it is operating at near maximum efficiency.

To-day the merits of power-pulled material conveyors, compared with those of fork truck unit load palletisation seems to have developed into a controversial subject. This should not be so. Each method has its own inherent advantages, although it is true to say that the advent of the unit load technique had considerably reduced the sphere of application of the conveyor. Nowadays it is extremely difficult to justify the installation of a conveyor if it has to be loaded and unloaded by personnel other

than the production operators. Put another way, if personnel are employed solely for the purpose of loading and unloading material conveyors it is a pretty safe bet to assume that the conveyor is not particularly efficient.

First diagram shows the main elements and their relationship, that finally determine the quantity of material in the factory pipe-lines. Before any planning of materials handling methods can be accomplished for any project it is first necessary to know the volume you have to handle and how this volume is established. Recent experience in factory expansion planning leaves no doubt that until the production tech-

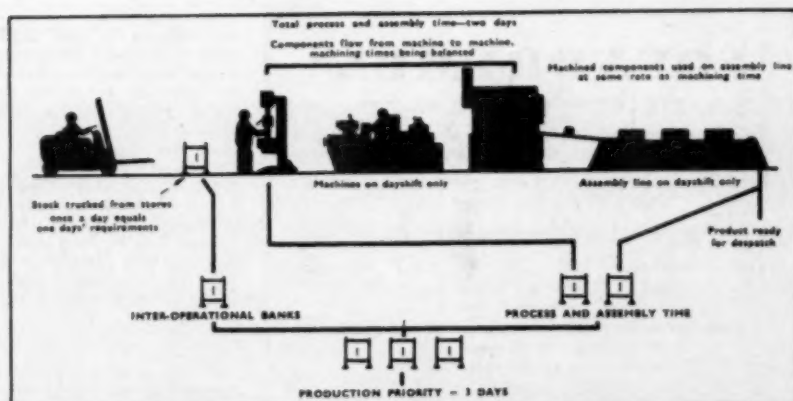


Fig. 3. Three days' supply of components are required to fill the production pipe-line in the right-hand diagram, assuming that the time required to machine and assemble the unit is two days, and that the operations are planned on a continuous flow production basis. Adding the supply bank in diagram 2, the total factory inventory is nine days' supply.

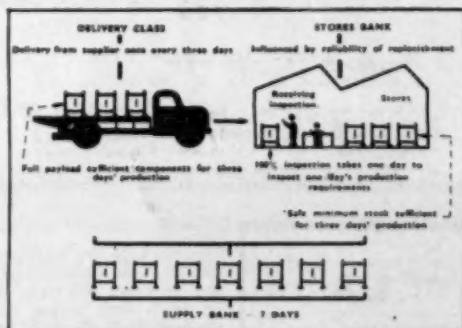


Fig. 4. Additional stage in the supply side, namely, inspection on receipt, has the effect of increasing the quantity of the supply bank, which is now seven days' supply, instead of six days', as in diagram 2.

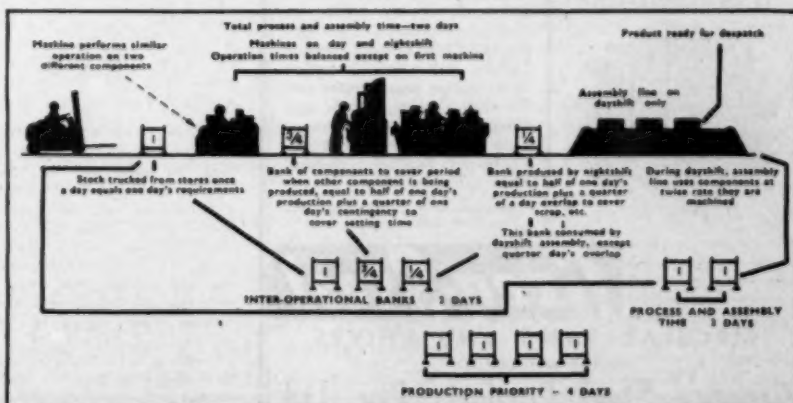


Fig. 5. Interruption in the production flow increases the quantity of material in process. Machine line is working day and night shifts, while assembly is on day shift only. First machine on the line is operating on two different components. Inter-operations banks have had to be established, inflating inventory. Total factory inventory in diagrams 4 and 5 is therefore 11 days' supply, against nine days' supply in diagrams 2 and 3.



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niques have been resolved and established it is not possible either to determine the amount of storage area necessary or to decide upon the nature and quantity of the handling equipment required.

For purposes of clarity it has been necessary to split the inverted family tree in the first diagram into two parts in the other diagrams. The terminology used to describe the main elements in these diagrams is perhaps not in widespread use but that does not affect them fundamentally.

### SUPPLY BANK.

Diagram 2 shows the first main element in our factory priority and it indicates how the supply bank is arrived at. It is assumed in this instance that the material has been fully inspected at the source of supply and is received into the factory ready for immediate use. The percentage of inspection necessary and the point where it is carried out—whether at the source of supply or upon receipt—influences considerably the amount of stock carried. You will note, says the author, that our supply bank is equal to a six-day period.

The third diagram shows the method of establishing the production priority. In this instance it is assumed that both the machining and assembly lines operate on day-shift only. This is not often the case on high volume output where the layout comes near to flow production. Owing to the high capital value of the machines it is customary to operate them on both day and night shifts as against the single shift for the assembly line. It will be noted that the sum of the supply bank and the production priority is equal to nine days.

### A PRINCIPLE ESTABLISHED.

Returning now to our supply bank, we find that the fourth diagram shows a slight deviation. The material is now inspected upon receipt. This has necessitated carrying some additional stock, and increased the length of our material pipe-line. You will note that the supply bank has increased from six to seven days' stock. An analysis of the two supply bank diagrams enables us to conclude that less stock is necessary in the factory pipe-line when the material is inspected at the source of supply than would be the case if inspected upon receipt.

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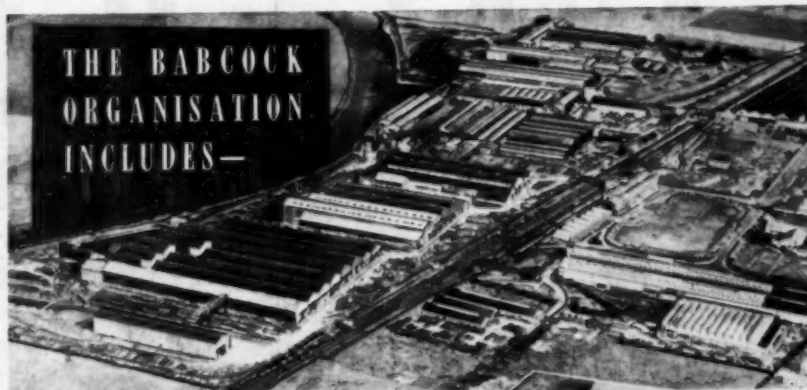
A materials handling principle has been established. This very necessary function of inspection must be given major consideration in any planned production programme from a materials handling point of view, especially where the unit load technique is being introduced. Often an economical position for the establishment of a unit load is created by an inspection point in the supplier's factory. In this connection it is well to review inspection set-up, because the day has gone when the gentleman in the white coat is precluded from making a contribution to a good materials handling set-up.

Diagram 5 returns to the production priority part of the family tree. Note that the production flow has been partially interrupted. The first machine in the line is producing two different components and the machine line itself is operating on two shifts as against the one shift of the assembly line.

When laying out a production line on this basis the planning engineer would need to analyse the situation before coming to a final conclusion. Take, for example, the first machine; if it could produce the alternate components without the need for re-setting, and it had at least twice the capacity of subsequent machines, the intermediate bank of material would not be necessary—provided, of course, that the second machine line is continuous. If, however, the alternate component was used in an assembly machine, then a bank of components proportionate to the trucking frequency would be necessary. If conveyerized, the bank would be proportionate to the speed and spacing of the conveyor. It becomes clear that materials handling considerations by the production planning engineer are actually influencing the type of machine to be used and the type of jig or fixture used with the machine.

It will be observed, from the diagrams that by interrupting the flow of work we have extended the factory pipe-line by two days, a total of 11 days' supply (seven in the supply bank and four production priority) against only nine days in the previous instance—a major consideration when methods of production are being planned.

The illustration on page 32 shows clearly how material banks



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have to be established when common equipment is used to process a miscellaneous range of components.

Analysing a production process or a series of production operations in order to ensure the most economical materials handling layout is greatly assisted by the standard type of flow process chart, using five operational symbols, one each for operation, transportation, inspection, temporary storage and permanent storage.

### TABULATING "WHAT HAPPENS."

Reduced to its essentials, the flow process chart is nothing more or less than a handy form on which to tabulate "what happens" to a piece of material, component, sub-assembly or other identifiable unit as it passes through a sequence of processes or operations. Under certain conditions of manufacture it is necessary so to arrange the feed and clearance of material to and from the usage point that the tempo of the production process is not interrupted, even momentarily. A typical example of this is to be found in the modern press shop. The maximum output of any given press if loaded to power capacity is governed by the press crank speed. A loss of one stroke of the press could quite easily mean the loss of one component. Where overhead conveyors for feeding or

clearing the presses are not practical other methods have to be resorted to; a floor roller conveyor is probably one of the simplest methods that can be used. With this the operator can quickly exchange a full container for an empty one or vice-versa without loss of time or undue expenditure of energy. With this application it is usual to place the roller conveyor alongside the press or machine so that the trucker can take from one end and feed on to the other.

The illustration on page 32 shows an experimental rotary table installed in the press shop to carry out a similar function. Whilst one stack of metal is being used another is waiting to follow on immediately the operator revolves the table to bring the material to the best operating position.

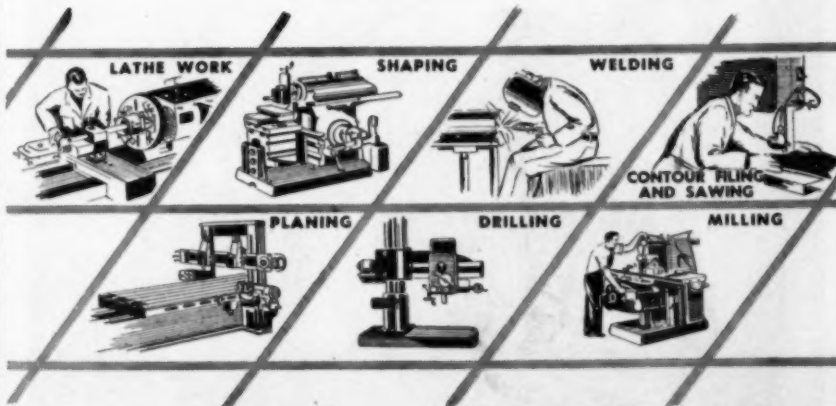
### HANDLING AND MACHINE DESIGN.

The development of the machine tool has had its effect on materials handling cost. Where continuous flow production is the aim, the planning engineer in order to achieve the planned volume at the most economical cost rate, endeavours to break down the total manufacturing time to the maximum number of roughly equal time elements, the ideal condition being one where each piece of processing equip-

ment is fully loaded over the manufacturing period. The greater the number of elements a manufacturing process is broken down into, the greater will be the frequency with which the part is handled, whether it be manually or mechanically. A stage could of course be reached when the movement and handling time of the article being produced exceeded the actual manufacturing time. Now in order to achieve the maximum degree of flexibility and adaptability, British industry in the past has relied to a major degree on the general-purpose machine tool. This has resulted in many instances in a number of different components being produced on one machine, and often this has caused related production activities to become divorced from one another. Consequently manufacturing times have become unbalanced, the flow of production interrupted and the material pipe-line extended. Nowadays, with the ever-increasing demand for higher output, the pendulum is definitely swinging in the opposite direction. Managements are beginning to realize that the general-purpose machine tool, although having the greatest flexibility factor, does not always produce the most economic product. It is a recognition of this aspect and a realization of the enormous savings arising from a good materials handling set-up that is forcing the trend more and more towards the installation of the special-purpose machine tool.

The development is an interesting one from the days when one machine drilled one hole through the stages of the multi-head and index fixture, all tending to reduce handling elements until we arrive at the present-day development of the transfer machine. Here a battery of machines, each performing a number of operations, are coupled to give a straight through flow where the handling element of loading and unloading the machines, with the exception of the first and final operations, is completely eliminated. Related activities become co-ordinated, inter-operation and inter-department movement is considerably reduced. This results in a marked diminution of horizontal movement of "in process" material, also a reduction in amount of stock necessary to fill production pipe-line.

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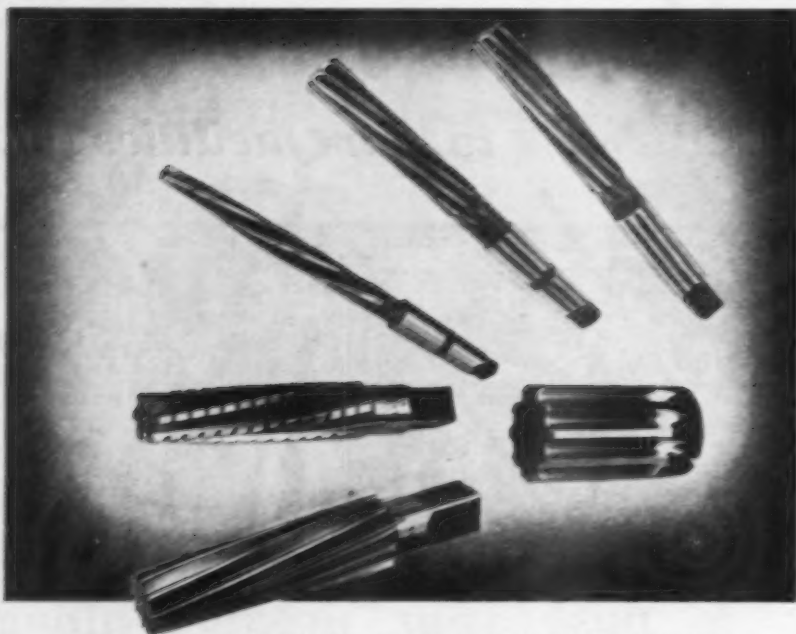
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(Continued from page 2)

the Middle East. An A.P. unit which stationed at the Star Golf at New Guinea, printed its own little publication which it titled, appropriately enough, "The Star City."

Until a few months back, Australian occupation troops in Japan had their own official newspaper "BOON." It has now been said to provide interests.

Not all newspapers, however, are printed on dry land. The "Ocean Times" is published daily aboard Cliveden White Star North Atlantic liners and is distributed gratis to all passengers. It also has a London office.

This article would hardly be complete without reference to the two most famous "Agency countries" in the world. The first is that of "The Times", London, the cost per line of which is 10s. for personal and 12s. for trade advertisements. The revenue from one column works out at about £100 daily. The other is the "Personal Columns" of "The Saturday Review of Literature", New York, noted for the bizarre nature of its insertions. At one time its editors considered closing the column, but readers wouldn't hear of it and finally they had to bow to the storm and let it remain.

Most of us enjoy reading our newspaper, but Jan Gerrit Klidman, former Dutch circus hand, likes to "digest" his news. He eats newspapers with a little brown sugar, and daily papers just off the press are a rare treat. Had not this issued from an authentic source, one might find friend Jan's queer meal "a trifle hard to swallow."

And now a word for a prominent figure in the newspaper world—he whose cry heads this article.

The newsboy conducts a unique business, he has the quickest turnover of any; he has no overhead; he works in all weathers. He is as agile of body as he is nimble of mind. Where the city's traffic is thickest you will find him. Some "crack" newsboys in Australia have been known to sell as many as 1,000 newspapers in a single day.

Fitting then that we should conclude with the last stanza of "Newsboys Eternal", a dedicatory verse by Australian journalist, the late John Barr:

At the Judgment Day they'll scatter,  
Newsboys with their urgent cries,  
And, though thunder bolts may shatter,  
Sales will mount to reach the skies;  
"Ere y're, lady, larst edishun—  
Satin tells 'is 'cart is broke—  
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### NEW MEMBERS.

#### VICTORIAN CHAMBER OF MANUFACTURES.

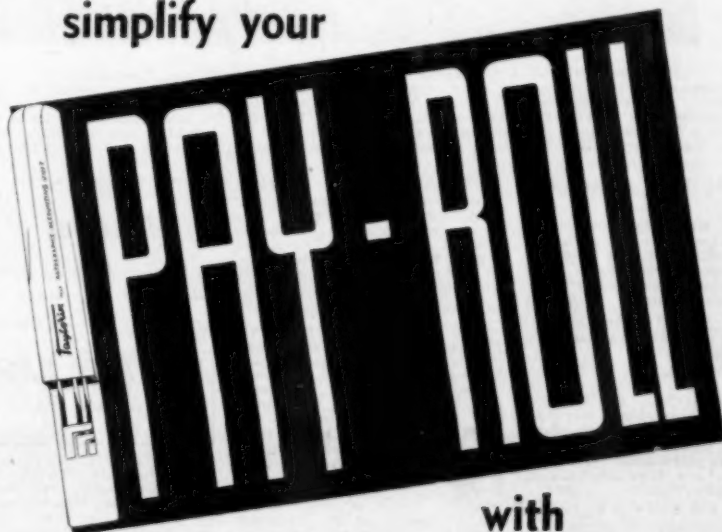
The following have been elected to membership of the above Chamber:

Amott, R. H., Pty. Ltd., Laundry and Dry Cleaning Machinery.  
Associated Pulp and Paper Mills Ltd., Mfrs. Fine Printing and Writing Papers.  
Carlen Distributors, Plastic Fabricators and Moulders.  
Davenport Plating, Silverware Mfrs.  
De Luxton Eng. Co., Repetition Engineer.  
Diesel Equipment Pty. Ltd., Engineers.  
Econwear Clothing Co., Clothing Mfrs.  
Feature Furniture, Furniture Mfrs.  
G. and G. Shop and Office Fitters, Shop and Office Fitters.  
Golden Bell Knitwear, Knitting Mfrs.  
H.P. Products Pty. Ltd., Cornflour and Gluten Mfrs.  
Hodges, Allan C., Repetition Engineering.  
Homemaker Furniture and Home Constructions, Furniture Mfrs.  
Kitson Plating Works, Electroplaters.  
Lamont Mfg. Co., Clothing Mfrs.  
Learner Chemical Co. Pty. Ltd., Chemical Mfrs.  
Mackay Mfg. Co. Pty. Ltd., Auto Parts Mfrs.  
Mann, R. W., Electroplaters, Electroplaters.  
Melody's Pottery Pty. Ltd., Bricks and Sewer Pipes.  
Midlands Textile Mills, Mfrs. Textile Goods.  
Montana Wood Products, Furniture Mfrs.  
McClean, D. I. and Co., Mfg. Furriers.  
"Neta" Industries Pty. Ltd., Mfg. Engineers.  
Olver, H. N., Brick Mfr.  
Piet Pty. Ltd., Packagers of Fresh Vegetables and Fruit.  
Quickened, B., Logging Contractor.  
Riverside Manufactures Pty. Ltd., Engineers.  
Scurrah, H. W., Furniture Mfr.  
Thornton and Stone Plastics, Plastic Moulders.  
White Way Dry Cleaners Pty. Ltd., Dry Cleaning.

#### TELEVISION RECEIVERS.

In view of Australia's plans to inaugurate television programmes at no distant date, Electronic Industries Ltd., South Melbourne, are preparing to initiate the production of television receivers. To this end, a five-acre site has been purchased at East Oakleigh, Victoria, where a new factory is to be built for the manufacture of certain components of the receivers, as well as for other types of products.

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# INQUIRIES FOR PLANT MATERIAL AND AGENCIES

THE AUSTRALASIAN MANUFACTURER'S INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

## SPECIAL NEW INQUIRIES.

**WHEN REPLYING to an Inquiry,** please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

**SPRING WIRE:** N.S.W. Company wishes to obtain large or small quantities of 16 or 17 gauge super or standard Spring Wire, bright or galvanized. Write to Ref. 8326, c/o "The Australasian Manufacturer."

**PASSIONFRUIT PULP — EXTRACTION MACHINE WANTED:** Makers of machines for extracting Passionfruit Pulp are asked to write to Ref. No. 8327, c/o "The Australasian Manufacturer." We understand that this machine consists of a vacuum pump and a container with a suitable nozzle, against which the halves of the Passion Fruit are placed, and the pulp is then extracted into the container in which a vacuum is maintained by a small pump.

**ELECTRODES:** Large surplus stock of Oerlikon Citecord, six and eight gauge, general purpose Electrodes. Available in Melbourne at below cost to clear. Write to Ref. 8327, c/o "The Australasian Manufacturer."

**WANTED, ENGINEERING BUSINESS:** General Engineering business with good equipment in Melbourne or Suburbs. Short lease premises no objection, as advertiser will have new factory available next year. Possible partnership or employment of existing owners considered. Fullest particulars of lines handled, equipment, premises and past financial records, in strict confidence to: "Engineer", c/o "The Australasian Manufacturer", 197 King Street, Melbourne.

**CEMENT BRICK MAKING MACHINES:** Firms manufacturing automatic brick making machines—preferably electric power—to produce 5,000-6,000 standard cement bricks daily, are requested to write to Ref. 8328, c/o "The Australasian Manufacturer."

**BOILER FEED PUMP AND HYDRAULIC PRESS FOR SALE:** Sydney firm has for sale a Boiler Feed pump, 71 h.p. motor, 500-600 g.p.m., at 150 lbs. p.s.i. Compact, well constructed unit. Had little use. Also all steel welded 25 ton hydraulic press, 15 in. stroke, 15 in. opening, complete with fittings. Reply Ref. 8329, c/o "The Australasian Manufacturer."

**ALUMINIUM AND BRONZE METAL POWDERS—PRODUCTION IN AUSTRALIA:** Having disposed of their interest in an English Company which manufactured aluminium and bronze metal powders, the former Works Manager, who was also a Director, along with another shareholder, are desirous of transferring some of their own machines to Australia and manufacturing these powders in this country. They are interested in partnership or other form of business association with a similar existing establishment in this country. Firms interested in this proposition write to Ref. 8330, c/o "The Australasian Manufacturer."

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(AUST.) LTD.  
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**WALL AND FLOOR TILES:** New Companies manufacturing Wall and Floor tiles are requested to write to Ref. 8331, c/o "The Australasian Manufacturer."

**ELECTRIC MOTORS:** Tasmanian manufacturer desires to purchase supplies of 1 H.P., 3-Phase (totally enclosed) Electric Motors, for equipping new machines. Quotations invited, together with prints, giving dimensions, total weight, and delivery position to Ref. 8321, c/o "The Australasian Manufacturer."

**DIVIDING HEAD FOR SALE:** N.S.W. firm has for sale one new I.X.L. 5½ in. centre Dividing Head. Price £38/10/-. Write Ref. 8320, c/o "The Australasian Manufacturer."

## ELECTROPLATING

Applications are invited from Experienced Tradesmen in Electroplating Business and Manufacture to purchase share in established business as working partner in large country town. Full particulars may be obtained on enquiry to: F. C. BURDON, Box 126, MOUNT GAMBIER, S.A.

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66 KW Bell Type Electric Furnace with double base. Internal measurements approximately 6ft. by 4ft. by 4ft. For inspection and further particulars, apply: LINDBERG FOSTER DISPLAYS PTY. LTD., 548 Church Street, RICHMOND, VIC. 'Phones: JB 1534-5.

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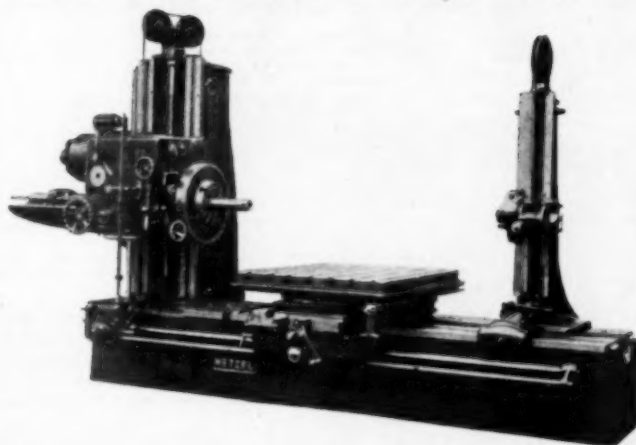


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This second-hand machine is in fair condition and offers a remarkable opportunity to a concern requiring this type of machine. Fully motorised. Spindle dia. 3½ in. Will bore max. dia. 19½ in. Working surface of rotating table, 39 in. x 47 in. Equipped with facing head and floating spindle.

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"Australia's Largest Stockists of Machine Tools"

**MANUFACTURE OF COOL CHEST:** Designer of an electrically powered air cool chest Patent No. 26,660/50, desires to contact anyone who might be interested in the commercial manufacture of such patent. Write to Ref. 8322, c/o "The Australasian Manufacturer."

**HIGH PRESSURE PUMPS:** W.A. firm wishes to contact a manufacturer of small high pressure pumps, suitable for pumping agricultural sprays, such as the "Bordeaux". Write Ref. 8323, c/o "The Australasian Manufacturer."

**AGENTS WANTED FOR ELECTRIC HOISTS:** The manufacturers of a well-known range of electric hoists wishes to appoint active agents in Victoria, Tasmania and Newcastle. Write to Ref. 8324, c/o "The Australasian Manufacturer."

**RUBBER TECHNOLOGIST. POSITION WANTED:** Qualified English Technologist with 20 years' experience general rubber goods manufacture. Formerly chief chemist two leading companies. At present resident N.Z., but arriving Australia early 1951. Write to Ref. 8325, c/o "The Australasian Manufacturer."

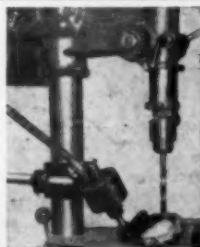
**EQUIPMENT FOR BONDING PROCESS:** An American Company claiming to be exclusive manufacturers of equipment for a new impregnating process for sealing micro-porosity in non-ferrous castings designed for pressure tight applications, seeks a mutually satisfactory arrangement with an Australian firm regarding development of the process in this country. If interested, write to Ref. No. 8314, c/o "The Australasian Manufacturer."

**WATER TAPS AND TOOL-POST LATHES:** Firms who are interested in the manufacture, under licence, of a patented two-piece water tap, and/or a tool-post for lathes, said to excel existing types, are invited to write to Ref. No. 8312, c/o "The Australasian Manufacturer."

**MANUFACTURERS OF SMALL TOOLS:** and precision tools who are desirous of expert representation in the Far East, are asked to write to Ref. No. 8311, c/o "The Australasian Manufacturer."

**STEEL STRIP OR OFF-CUTS:** If you can supply a Victorian firm with up to five tons of 22 or 24 gauge soft steel strip or offcuts 2 1/32 in. wide or slightly wider, write to Ref. 8313, c/o "The Australasian Manufacturer."

**TO MAKE RAZOR BLADES.** Mr. G. N. Wright, managing director, of Pal Personna Blades Ltd., is at present visiting Melbourne in connection with the establishment of his organisation in Australia.



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Look your plant over—where machines are noisy, running hot, causing needless stoppages in production, call us for specialised experience in repair and maintenance, and, where necessary, Dynamic Balancing of defective equipment.

● We do not manufacture Balancing machines for sale. Our business is to utilise our patent rights to perform this Balancing Service for our clients.

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### SIMPLIFIED WEIGHT MANIPULATION.

A new Aperiodic Balance simplifies and speeds up routine laboratory weighing. Disadvantages of previous instruments have been that it was necessary to use many weights, thus causing possible errors in addition; the necessary manipulation of these weights by hand was often a further source of inaccuracy due to their possible alteration of standard during use.

An Automatic Balance which obviates these deficiencies has now been developed. The chief feature of this instrument is the entirely new principle of weight presentation, which, while obviating the chances of error, requires much less manipulation and is still sensitive to 0.1 milligramme.

Apart from the two riders for fractional weighing, only two weights are used at each operation, instead of manipulating many weights as by former methods. These are selected by an automatic weight-change device, consisting of two circular tables. The whole is contained in a dust-proof, glass-topped housing, mounted inside the balance case, providing a double safeguard against corrosion of the weights.

Handling of the weights by the operator is entirely eliminated as all adjustments are controlled by the manipulation of two external dials; these are mounted in the most convenient operating position—below the baseboard.

Release can be effected by right and left-hand side action. A safety device is incorporated to obviate the possibility of the weights being applied while the beam is swinging; thus completely avoiding jarring of the beam and consequent damage to the agate knife edges.

### TRIPLE ACTION MIXER.

A new mixer increases efficiency in numerous industries. Very many products depend on blending, mixing, emulsifying or finely dispersing certain ingredients. Imperfections in one of these processes may cause an unnecessarily high consumption of costly materials, or, as in the case of badly dispersed paints or pigments, an inferior end-product. To ensure perfect blending, two or three different machines are sometimes used.

A mixer which performs three blending processes in a single operation has now been perfected. This result is produced by a special head, the main features of which are specialised design and precision engineering. The rotor is designed with three separate grinding surfaces set at an angle. This component is fabricated to very close tolerances so as to match the accompanying stator very finely. The grinding space between them can be adjusted to suit varying requirements by means of a handwheel with a calibrated scale.

The normal rotor-stator materials are hardened steel, and cast iron, but for special purposes other combinations are provided, e.g. aluminium for vinyl or latex dispersions, or stainless steel for foodstuffs, drugs, and some textile finishes, etc. The standard stator is jacketed and equipped for using a coolant; if needed, complete jacketing can be supplied.

Maintenance is very easy: the head can be stripped in two minutes; removal of four wingnuts gives access to the homogenising chamber.

### BEEBLE-ELLIOTT INCREASES CAPITAL.

Beetle-Elliott Ltd., plastic manufacturers of Sydney and Melbourne, is lifting its authorised capital from £500,000 to £1 million.

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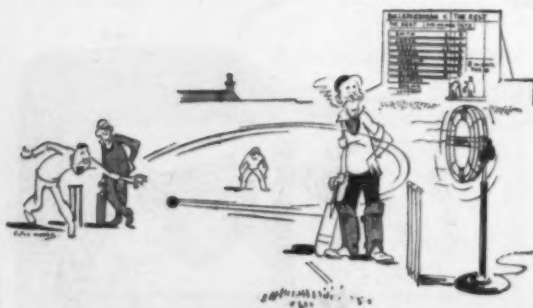
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### NEW SODA FOUNTAIN DESIGN

Designed and made by Eckersley & Sons Pty. Ltd., the Eckersley Junior soda fountain recently made its appearance on the market.

The product is aimed at giving quick service at a minimum of effort and cost. The Eckersley Junior is based on an American blue-print but it incorporates a number of features which the company, with its long experience in soda fountain and similar equipment has been able to add.

The latest product is described as a "modern, reasonably low-priced, profit-making fountain that produces lowest-cost, highest quality soda water." Built throughout of heavy gauge metal, it has an all-welded construction that should go a long way to giving cause for the manufacturers to confidently predict a long life of hard service. It is fitted with a Coldstream air-cooled condensing unit, is fully automatic and amply powered. It embodies a reservoir of ice-cold water.

It is equipped with a self-contained and fully automatic carbonator, already coupled, for making soda water. It has widely spaced combination soda and water arms which are intended to give two attendants use of the fountain without congestion.

Wherever possible, stainless steel is utilised, giving the unit both rapid cleaning aspects as well as adding considerably to its attractiveness. The model is made with a Laminex serving rail — or without, for back bar mounting. The counter front is stainless steel or baked enamel to choice. It is fitted with six porcelain syrup jars with stainless lids and ladles, enclosed in welded stainless steel "flush-out" gantry, as well as a running water ice-cream dishes holder mounted alongside. It includes two removable stainless steel utility holders for spoons and for crushed fruit toppings there are three refrigerated porcelain jars with stainless steel lids and ladles.

Altogether it is an attractive and efficient unit and, being something which comes under direct and frequently critical scrutiny of the public, embodies features that give it added value from the "shop attractiveness" as well as functioning in a manner that satisfies the user.

### MILD STEEL DRUMS FOR THE CARRIAGE OF LIQUIDS.

The Standards' Association of Australia has issued a specification for Mild Steel Drums for the Carriage of Liquids, A.S. No. K-87-1950. This specification was drawn up as the result of requests from the Australian and New Zealand Railway Conferences and the manufacturers of containers.

The specification is the first of a projected series covering drums of certain types, irrespective of the liquid to be carried which will be followed by a code of practice recommending the type of container for the material to be carried or stored.

A.S. No. K-87 covers drums with nominal capacities of 10, 12½, 25, and 44 gallons in one thickness of body and head for each size, except the 44 gallon size, where minimum thicknesses of 14 and 16 B.G. plate are specified.

Ullage limits and tolerances in dimensions and quality of carbon plate are specified, the construction of the drum is covered in detail and a clause requires marking with the manufacturer's name, the gauge of metal used (B.G.), the nominal capacity in imperial gallons, the year of manufacture, the number of specification and type of drum.

A drop test and a hydrostatic pressure test are also included.

Copies of the standard may be purchased from the Headquarters of the Standards' Association of Australia, Science House, Gloucester and Essex Streets, Sydney, or from any of the Association's Branch Offices in each State of the Commonwealth, and Newcastle, N.S.W. Price, 2/-.



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★ MACHINE ENGRAVING ★ ELECTROPLATING  
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## Metal Powders in Engineering

Comparatively little is commonly known of the many ways in which metal powders can be used in engineering, and it is sometimes thought by those who have a slight knowledge of powder metallurgy that this is the sole useful outlet for such powders. In fact, the amount of metal powder used in powder metallurgy is insignificant when compared with the quantities required for other purposes.

IT IS PROPOSED, in this article, to mention briefly some of the many ways in which metal powders can give useful and often unique service in almost every branch of engineering. Some of these uses are old and well understood in restricted circles, but are not generally known or exploited. There are, for example, metallic cements which depend upon exciting oxidation and have been widely used to fill blow holes in castings and for similar purposes. Generally they consist of iron powder and some cement, such as plaster of Paris. They are mixed with water and dry to a hardness approximating to that of iron. Similarly, iron powder has been made to impart to concrete floors a hard and water-proof surface. Among other metal cements may be mentioned a mixture of magnesium oxychloride and copper powder, which is suitable for sticking metal surfaces together.

### BRAZING POWDERS

For brazing bright steel surfaces together, metal powders, and especially copper powder, have proved very valuable. The older method of using copper wire is satisfactory for simple joints, but does not give such good results where more complicated forms are required. In such instances it is very convenient to take fine copper powder, mix it with thin cellulose dope, and paint it on the surface to be brazed. The proportions of copper powder and dope are such as to produce a smooth and fairly thick paste, which is applied with a camel hair or other fibre brush. Formerly, most engineers were accustomed to use brass for general brazing requirements, and this generally necessitated the provision of de-brazing equipment for the removal of surplus material. Partly for this reason, but also because of the greater stringency of present-day requirements, silver solders are being increasingly employed. The application of silver solders in powder form is not yet widespread, but the convenience of powder, particularly in those cases where induction heating is adopted, or where parts are bright brazed, is becoming more widely appreciated.

The use of a free-flowing silver solder facilitates, for example, the rapid mounting of cemented-carbide tool tips, and it is comparatively simple to ensure that the thickness of brazed joints is

maintained within reasonable limits. Some of the lower melting point silver solders with a melting point of 720 deg. C., may conveniently be used when fairly complicated shapes must be brazed or soldered which would be liable to distort at higher temperatures.

### POWDERED SOLDERS.

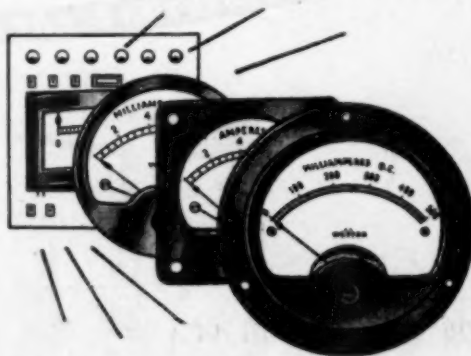
Not many years ago plumber's and tinman's solders were the only types generally known, and both were comparatively simple. There were also hard solders, used by coppermiths and whitesmiths, which were usually composed of copper and zinc, in contrast to the soft solders with melting points of about 335 to 340 deg. F. (170 to 171 deg. C.) and consisting mainly of tin and lead. The electrical industry, says H. W. Greenwood in an article in "Machinery", has been responsible for the introduction of a very extensive range of solders with high melting points from about 800 deg. C. to 1,400 deg. C. or even 1,500 deg. C. Such solders are required in connection with vacuum devices, discharge lamps, rectifiers, and other devices. All these solders are used in fine powder form mixed with volatile liquid to form a paste, and then applied in the positions where joints are required. The composition of such high melting point solders may range from compounds of iron and nickel with metalloids, to mixtures of nickel and molybdenum or tungsten.

Very large quantities of solder powder containing from 30 to 50 per cent. of tin, the remainder being lead, are used to-day in the production of soldering pastes, the powder being mixed with flux, so that it is ready for immediate use. Powder solder is also applied to the tinning of large surfaces by flame pistol in the same way that other metal powders are sprayed.

Powders, principally of aluminium and zinc, but also of other metals, are extensively employed for metal spraying to protect metal surfaces from corrosion and for other purposes. Hundreds of tons of powder are consumed annually in this way, and the quantity is rising rapidly. Of the two metals zinc is probably used more extensively at present, but it is not unlikely that aluminium will predominate in the future. In addition, large quantities of aluminium are used as flake powder in paint.

Sprayed zinc alone provides valuable protection, and it also forms

## Sangamo-Weston Instruments



### Accurate, Reliable, Sturdy

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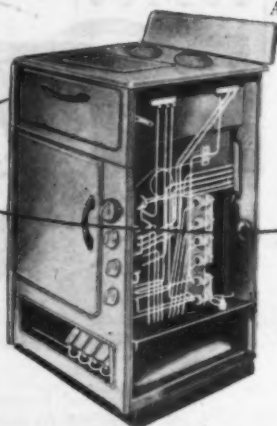
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a very satisfactory base for paint. It is applied with both powder and wire pistols, but it should be noted that with the latter system the metal is atomized to powder before it reaches the surface to be coated. In passing it may be noted that there are other methods of treating surfaces with metal powders apart from spraying. Thus there is the Calorising process, in which aluminium is used, and Sheradizing, with zinc powder. In both cases the powder is allowed to remain in intimate contact with the parts to be treated at elevated temperatures, so that it diffuses into the surfaces and so provides protection.

The process known as aluminizing involves the spraying of iron or steel parts with aluminium powder, followed by heating until a definite zone of aluminized metal has been obtained. This treatment has given very successful results when applied to flame baffles and other parts of jet propulsion units, and has recently been tried out as a means of preventing corrosion of silchrome valve stems.

The general procedure is to clean the surfaces to be protected by grit-blasting them and then spray aluminium to a depth of 0.008 to 0.008 in. This surface is next heated to about 850 deg. C. for a sufficient time to ensure the penetration of the aluminium to a depth of about 0.008 in. With iron, mild steel, and many alloy steels such treatment produces an intensely hard skin of alumina—the refractory oxide of aluminium—which withstands corrosion and oxidation at very high temperatures.

For silchrome valve stems different conditions are necessary. The temperature at which diffusion into the silchrome skin takes place is higher, namely about 1,000 deg. C., and the time required is about two hours. At this temperature grain growth takes place, and subsequent treatment is necessary to prevent brittleness. A tempering operation is carried out by heating to 840 deg. C., holding the valves at this temperature for 30 minutes, and then quenching in water. Experimental work on this particular application is proceeding, since the earlier results were disappointing, apparently because chromium and silicon contents were too high.

Aluminizing has important possibilities and should find many fresh applications when the control of the process is better understood.

## THE THERMIT PROCESSES.

Metal powders have also given valuable service in connection with the Thermit processes. Here the avidity with which heated aluminium will extract oxygen is utilised as a means of reducing many refractory oxides and producing their metals. The commonest of the so-called Thermit mixtures is one of magnetite or similar oxide of iron with aluminium powder. The action is initiated by means of a match, which acts in a somewhat similar manner to the fuse and detonator used to fire an explosive charge. Not only has the Thermit process been used to reduce rare refractory oxides and so obtain metal, but is

(Turn to page 40.)

Instal

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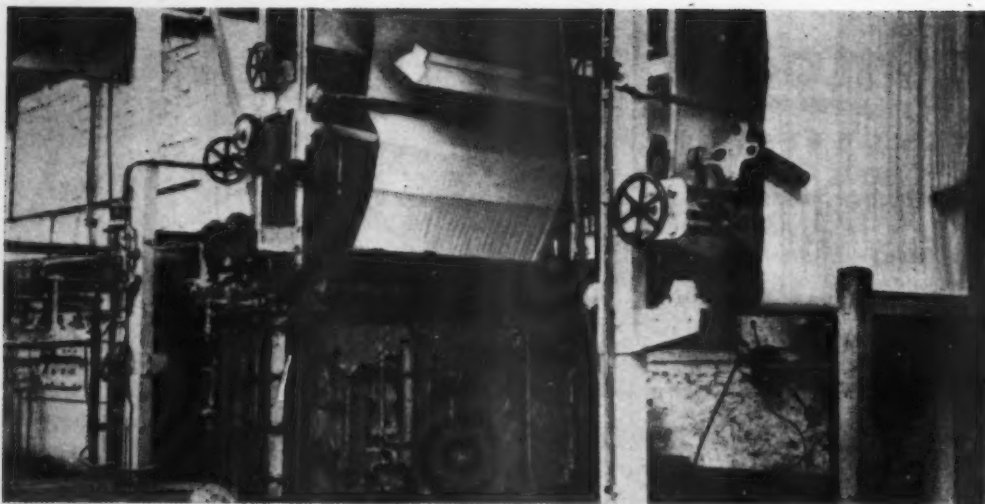
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Vat dyeing in molten metal is carried out in this compact unit.

## Molten Metal Dyeing Perfected

The use of molten metal as the medium for fixing the colour in vat-dyeing of fabrics has been perfected by a British firm. The principle is essentially simple: the cloth is impregnated with dye liquor and then passed through the molten-metal bath where dyeing is completed and the colours "set."

**THE EQUIPMENT** described in this article, known as the Standfast metal machine, is comprised of two units, the dyeing machine, and a conventional soaping range. Both units are run at the same speed. During dyeing, the cloth is passed continuously through the dye liquor and directly into the molten metal. In the dye bath, the cloth becomes thoroughly saturated with dye liquor and all excess is squeezed out by the pressure of the metal.

During passage of the cloth through the molten metal (which is maintained at a temperature of 90 to 105 deg. C.) dyeing takes place. When the cloth leaves the machine, the exhausted dye liquor is removed in another bath very similar to the dyebath but which contains a glauber-salt solution as the wash liquor.

The cloth then passes into an open-width soaper where it is oxidized and washed and given a thorough soaping and final successive washing before being plaited down on trucks for drying.

The three main functions of the metal are (1) to exert a uniform squeezing effect on the cloth so that it can modify the surface and apply the pressure to conform to the surface requiring pressure; (2) to exclude air com-

pletely during the dyeing process; and (3) to act as a source of heat in intimate contact with the dyestuff and fabric and thus to give a rapid transfer of heat.

Full fixation, fastness, and increased penetration are said to be obtained in a matter of seconds.

The maximum speed of the range is 120 yds. per minute. This limit has been fixed by mechanical considerations, and perfectly satisfactory dyeings are said to have been obtained at this speed. Over 6,000,000 yds. of cloth have been dyed by this process, and one machine has produced as much as 45,000 yds. in a single 11-hour day.

The shade is said to be uniform throughout, without any trace of darkening of the selvages. Since cloth is normally dyed in one run, there are no batch-to-batch differences. There are no bad ends; the cloth is all utilisable up to the last inch; and mottled dyeings, sewing repeats, etc., are said not to occur with this process.

Types of cloth which have been dyed on the machine include cotton plain goods, cotton-and-viscose brocades, all-viscose brocades and plain goods, linen plains and damasks; towels, nets, marquisettes, and velvets. The machine thus has a wide range.

### THE MOLTEN METAL.

Early work was carried out on a laboratory scale using mercury as the molten metal. Promising results were obtained, and it was felt that mercury would be an ideal metal in many respects; but in view of the health hazards that would arise from the use of this metal, it was necessary to look for an alternative.

The metal chosen as most suitable was an alloy, containing bismuth, cadmium, tin, and lead. The metal is trade-named "Cerro-bend." It has a melting point of 71 deg. C. and a density of 9; when molten, it has a very similar appearance to mercury but has none of its health risks. It has, however, the slight disadvantage of a higher melting point which means that anything coming in contact with the molten metal during the dyeing must be at a temperature greater than 71 deg. C.

The cloth is heated just prior to the dyeing by passing over steam-heated cylinders. The dye liquor is at a temperature of 75 deg. C. at the point of entry into the dyebath.

### PRE-MATCHING.

One of the most important features of this method of dyeing is that all matching can be carried out beforehand and transferred

accurately to the bulk machine.

The technique of the British firm mentioned requires an assistant chemist to match the shade (as soon as patterns and cloth are available) on a small model of the large machine, with its speed adjusted accordingly. He runs small pieces of cloth of a suitable size through his machine.

The dye liquors are made from standard suspensions and known concentrations of chemicals, made up to known volume. The dyebath of the small model machine holds about 100 cc. A pattern can be run through the machine in about 15 seconds, plus the time required for the oxidizing, soaping, and drying.

This pre-matching is an important stage, and care must be taken, writes Fred Brewster in "The Textile World", to have dye suspensions of the correct strength to ensure that the results are reliable and correct. The formula, when completed, is given not as a percentage but as composition of dyestuff and chemicals in grams per liter.

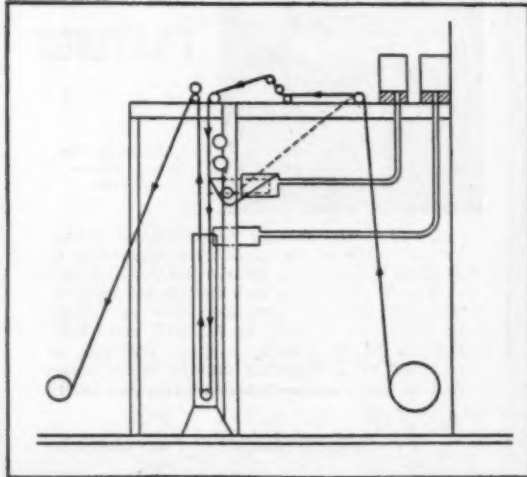
Some time before the cloth is to be dyed—probably an hour or two—the colour is made up in bulk to this formula. As the company has several dye tanks, several shades can be made up in advance. As a precautionary measure against mistakes in weighing,



etc., a further sample of this liquor is run through the small machine. After this check has been made, it is known that the dyeing can proceed without any trial pieces being run through the bulk machine, with certain know-

of the dyestuff up to the dye-bath and through the molten metal. This reduction is possible with the finely dispersed modern vat dyestuffs.

The dye-bath on the Standfast machine is designed to be suitable



General view of standfast metal machine shows path of cloth from roll through molten metal in bath. Dotted line shows alternate flow through padding trough. Dye level is maintained by float valves and reservoirs.

ledge of just what the finished shade will be. This pre-matching saves a great deal in time and replaces the usual rule-of-thumb methods with technical control.

#### DYE TEMPERATURE.

Because sodium hydrosulphite and some vat colours are not stable at elevated temperatures, they do not store dye liquors at 75 deg. C. The dye stuff is made up cold to the required volume along with caustic and hydrosulphite in a higher concentration than is normally used. The dispersing and wetting agent are also made up. The dyestuff is stored cold until immediately before use, when it is heated very rapidly by passage through an efficient dispersed modern vat dyestuffs.

The hydrosulphite and dyestuffs are reasonably stable for several hours at this low temperature, especially as the normal wetting process is omitted. No attempt is made to obtain reduction at this stage, although a certain amount does occur with some colours. Reduction is achieved in a matter of 5 to 10 seconds during heating, both during passage

for all types of cloth and for all speeds. It is capable of handling dye feeds of anything between 1 and 10 gal. per minute, depending upon the speed and weight of the cloth.

The amount of dyeing taking place in the dye-bath must be kept to a minimum. With a dye-bath of 1-gal. capacity, it is found that these aims are achieved satisfactorily. The dye level is maintained automatically to within less than 1 in. with any rate of liquor consumption up to 10 gal. per minute. Furthermore, with this capacity, it is found, says the author, that replenishment is sufficiently rapid to eliminate any signs of tailing which might occur in a large dye-bath.

In actual practice, variation of speed has no effect on either depth of shade or the quality of dyeing, provided sufficient time is given for fixation of the dye in the molten metal. Hence, if the cloth is run at 100 yards per minute with complete fixation, it can be slowed down to 30 yards per minute; or the speed can be varied as often as desired with no influence on the shade.

Metropolitan-Vickers 1,350 H.P. Diesel electric main line locomotives to a value of approximately 21 million pounds. These locomotives, weighing 76 tons each, had to be specially designed to meet the loading restriction of 10 tons per axle.

#### CHANGING COLOURS.

At the end of a dyeing, the dye liquor remaining in the system is pumped out, and the machine is thoroughly cleaned with hot caustic and hydrosulphite solution which is pumped through the whole system. After this cleaning, the next dye liquor can be introduced, and dyeing of the second shade can commence immediately. The time required to effect a complete change from one shade to another averages 5 minutes.

Fabrics dyed on the machine are said to be superior in penetration of dyestuff to similar ones dyed on the jig. This superiority is a result of the higher temperatures involved, the pressure on the molten metal, and the receptive nature of the cloth as it enters the dye-bath.

If it is desired to get even better penetration on some tightly woven fabrics, pigment padding is done before dyeing. This padding involves the use of the normal type of padding mangle. This unit always dries after padding. This stage of the process is run as a separate unit; the cloth passes in continuous length through the padder and into a hot-air dryer and on to trucks. Then, some time later, the cloth is run through the molten-metal machine, using the liquor left over from the padding made up to suitable volume with caustic and hydrosulphite added.

With other methods involving pigment padding, shade matching is difficult; but in this method, matching is said to be a simple matter. A normal matching is first carried out, and the amount of colour is calculated from the recipe. This formula is diluted to the amount required on the padder. As it is known how much liquor will be required on the metal machine, the unused colour is diluted to that amount and a check dyeing made.

In actual practice, the amount of work that is pigment-padded is only a very small percentage of the total; the main bulk is dyed by the straight-dyeing method.

#### COSTS.

Labour requirements with this machine are not very easy to compare with those of other units because the type of work is so very dissimilar. Meat plants very seldom handle anything less than 10,000 yards, while the British unit handles any length from one piece upwards. But for long runs, the requirements are believed to be at least one man less than those claimed by other companies.

Comparison with jig dyeing is more favourable. Even at a conservative estimate, production per

man is about four or five times as great.

With the Standfast machine, it is possible both economically and practically to dye any quantity of cloth whatsoever, from as little as one piece upwards. Several features help out in such dyeing, particularly the very small dye-bath and the speed with which the machine can change shades. For example, if one piece of cloth 100 yards long were dyed at 40 yards per minute, the time required would be 2½ minutes. When the 5 minutes or so required for cleaning are added, the average speed for the whole process would still be greater than 13 yards per minute, which is very much better than the time required for a similar piece to be dyed on the jig. The comparison is even better with a process requiring several hours for cleaning, say, 2 hours, which would reduce the average speed to less than 1 yard per minute.

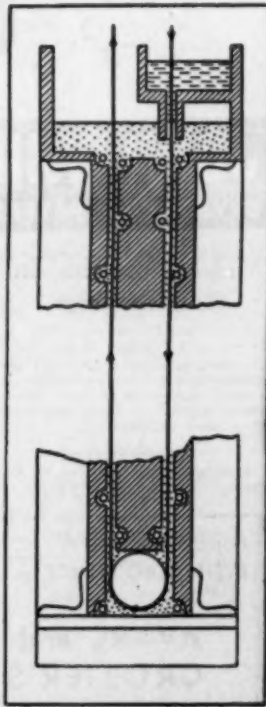


Diagram of molten-metal bath shows dye-bath, metal, and steam pipes to keep metal molten and at proper temperature.

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Australian General Electric Pty. Ltd. advise that orders have been placed by the Western Australian Government Railways for 48

It is believed that this is the largest single order placed in the world for locomotives of this type.

A.G.E. further advise that the same railways have placed an order for 18 British Thomson-Houston 400 H.P. shunting loco-

motives to the value of nearly half a million pounds.

As is well known, A.G.E. are the Australian associates of both Messrs. Metropolitan-Vickers Electrical Co. Ltd. and The British Thomson-Houston Electrical Co. Ltd.



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## Metal Powders in Engineering

(Continued from page 46.)

has been extensively employed for welding and for the production of a wide range of master ferro-alloys required in connection with alloy steel manufacture.

### AEROCRETE.

Aluminium powder plays an important part in the production of

Aerocrete. This substance, which is very light in relation to its bulk, has good thermal and sound insulating properties. It is obtained by the interaction of aluminium and an alkali whereby the aluminium is attacked and gas and heat are evolved, so that a foamy porous substance results which is somewhat similar to pumice stone. The Aerocrete process provides a good example of the manner in which the properties of a final product can be varied in accordance with the metal powder specification. In practice, control over

a wide range is possible by adjustment of particle size, and it is probable that such materials will find increasing application in the future.

Compressive strength may range from 100 to 1,500 lb. per sq. in., and where thermal insulation rather than strength is required, concretes from the lower end of this range are chosen. For general structural use, material having a strength of 500 to 800 lb. per sq. in., and a bulk density of 37 to 50 lb. per cu. ft. are suitable. Bulk density can vary from as little as 13 lb. per cu. ft. up to 62 to 65 lb.

### FILTRATION ELEMENTS.

Suitable choice of particle size and shape in a metal powder also permits very close control over porosity and size of pores when producing sintered sheets, cylinders, cups, and other forms used in the

filtration of many liquids and gases. The porosity can be varied over a range from 10 to 60 per cent. and the diameter of the pores controlled between 1 and 200 microns. These products, which have been made in bronze, copper, nickel, silver, and stainless steel, have given excellent service when filtering liquids ranging from water to crude diesel oil, and from strongly alkaline fluids to many organic liquids and solvents in daily use.

### "POWDER WELDING" OR METAL SPRAYING.

Powdered metals continue to find increasing application in connection with welding. They provide much of the material used in the coating of welded rods and afford a convenient means of adding special constituents. There is, however, another process which is of great importance to the engin-



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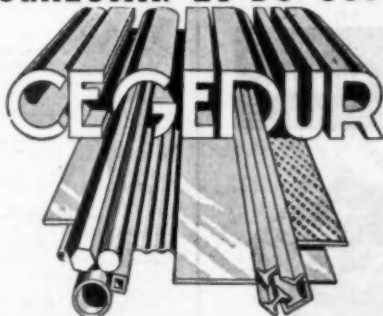
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ering industries, sometimes known as "powder welding". Here the powder metal is sprayed from a pistol in much the same manner that aluminium and zinc are applied for protection against corrosion. In this way it is possible, for example, to build up a worn steel part on a shaft by preparing the surface by grit blasting followed by spraying with steel or other metal until a thickness somewhat in excess of requirements is obtained. The deposited metal is slightly porous, but not sufficiently so to prevent it from functioning satisfactorily when it has been machined to size.

Although steel has been mentioned, there is little or no difficulty in applying any of the ordinary commercial metals or alloys by this powder spraying process. It has been successfully used with copper, bronze, brass, cupro-nickel, pure nickel, Monel metal, alloy steels, and similar materials. Quite apart from those instances where building up with metal is required, metal surfaces may frequently be coated with a thin layer of some other metal to ensure protection under special conditions. Examples are provided by the food industry, where it has been found advantageous to spray-coat the insides of many vessels with metallic tin to act as protection against fruit juices, organic acids, and other substances.

**MAGNETIC CLUTCH MATERIALS.**

Among the latest and most novel uses of metal powder by the engineer is in connection with magnetic clutches, the possibilities of which are now being investigated. Finely-divided magnetic materials are mixed with oil to form suspensions of suitable consistency. If such a suspension is subjected to a magnetic field the physical

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manufacturer. Head Office: Haw-  
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beth Street, Sydney.

## COLOUR MATCHING AND TINTING.

### REPCO INSTALLS TINTING MACHINE.

The Spartan tinting machine recently installed by Replacement Parts Pty. Ltd., 618 Elizabeth Street, Melbourne, is said to represent one of the most dramatic advances in the colour matching of auto lacquers since spray painting first began, and opens up a revolutionary development in service. Permitting accurate matching by formula of standard colours for all makes of cars, its ease of operation and economy are worthy of note.

With the aid of this machine colours can now be matched immediately in even pint, quart, half-gallon or gallon quantities without waste or unused residues, while the principle of simultaneous differential agitation of each component tinting colour incorporated in the machine guarantees laboratory accuracy of tints with delivery at factory speed.

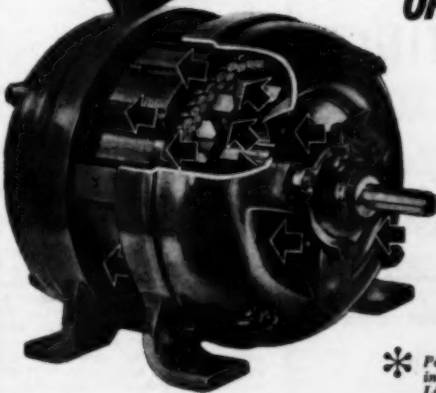
Agitation, which is achieved in two minutes, follows efficient paint factory principles and involves the use of electrically driven propeller type agitators. Provision for 15 tinting colour cans permits the widest possible range of colour production.

Although this is the first time that the Spartan tinting machine has appeared on the Australian market, it is no new untried gadget, having been successfully employed overseas for the past 15 years. Continuous research during this period has added many refinements.

The cans on the tinting machine, as well as the stock cans of tinting colours, represent the latest development in container construction, and the new, inverted lever lids provide much improved closures. Having no hollow rings to fill with solidified lacquer and prevent complete closure, they avoid the drawbacks of the old type triple tight container. Correctly designed run off valves also give added emptying efficiency to the cans during operation of the machine.

These knife-edge spring loaded valves close tightly on ground and polished facings ensuring absolute freedom from leakage and guaranteeing accuracy of measurement when tints are being run. The turntable of the machine revolves easily on its pivot head, bringing the tinting colours quickly into place over the mixing table, which is readily adjustable to the varying height of cans to be filled. A

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Designed for operation on 415 volts, 3 phase, 50 cycles.

\* Performance tests conducted under laboratory conditions by an independent authority found the temperature rise of the Linc-weld motor, under full continuous load at rated capacity, to be only 18° C.—22° C. below the maximum allowable rise of 40° C.—giving 55% cooler running.

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convenient stool of correct height is furnished for the comfort and efficiency of the operator.

Individual cans of tinting colour can be removed instantly from the bracket by lowering the can release handle. As the agitator remains in the mixing can it does not have to be cleaned when tints are changed—a fresh can with its own agitator replacing the discarded can. However, the range of stock tints is sufficient for most standard colours, while replenishment of individual tints is quickly and easily carried out.

A colour reference and formula book is supplied with the machine, which gives the matching colour required for any standard model car. By reference to the book the tinting colour required and the dial setting governing its proportion can be read off and applied to the dial measuring gauge. Accurately calibrated into 200 parts for pint, quart, half-gallon and gallon measurements, the float indicator of the mechanism is coupled to a sensitive arrow pointer which actually anticipates each reading to prevent over-pouring.

The average time taken to produce a colour on the Spartan tinting machine is four minutes, pints taking a shorter time and gallons a fraction longer. By adopting a system by which the making up of a matching colour is put in hand immediately the customer places his order at the counter, this time may then be occupied in filling his requirements in the matter of thinners, undercoats, etc. A label for the colour, invoice, and so on may also be made out during this period and it will generally be found that the finished colour is ready as soon as or before these operations are completed.

The following is the range of auto lacquer tinting colours with their manual reference numbers, while the figures opposite them

are suggested ratios for the, say, a 50 gallon initial order for a machine.

Code No.	Colour.	Quantity. Gals.
L1	Black	8
L2	Iridescent	2
L3	White	15
L4	Yellow Oxide	3
L5	Medium Yellow	2
L6	Light Yellow	2
L7	Red Oxide	2
L8	Cadmium Red	2
L9	Medium Green	4
L10	Prussian Blue	4
L11	Permanent Blue	4
L15	Burnt Umber	2
L20	Coarse Iridescent	2

Lacquer thinner 600-2302—4 gallons.

Spare 11 gallon mixing cans complete with agitators and run-off valves are available as are all replacements. Cans, labels, and label paste are also supplied with full directions for use.

The machine is fitted with a totally enclosed flame-proof electric motor which quietly drives the agitators at correct speed. It should be remembered that the machine matches the original colour applied to the car or truck and that variations caused by ageing or deterioration of the finish from weathering, road-film, etc., need to be adjusted by the user by normal tinting.

This service now in operation by The Lacquer Department of Replacment Parts Pty. Ltd. (Repol) answers the requirements of the fast increasing range of new cars and trucks in Australia, with their ever-increasing range of colours each year.

## CANISTER MANUFACTURERS

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INQUIRY DEPARTMENT  
SEE PAGE 40



"Bound to get there"—but sometimes Mr Weston had to puzzle it out.



Mr. Weston on the bridge of a canal in Holland.

## Australian Businessman Tells of Europe To-day

"BOUND to get there" is the slogan of Weston's Pty., Ltd., of 9 Macquarie Place, Sydney. It might equally be the personal motto of the firm's governing director, Mr. A. N. Weston.

The geniality and bonhomie of Mr. Weston thinly disguise business acumen, shrewd judgment and an iron determination to succeed where others have failed. He has built up this firm of packaging specialists until it can cope with every packing problem—no matter how small or how big—and it has now achieved a standing and a reputation known far beyond Australia. One can find everything from brown paper and gum tape to a dispenser in the premises in Macquarie Place. There are gumming and labelling machines, steel strapping machines, hand-operated elevating trucks, cellophane sealing machines, tacking and nailing machines and a host of other interesting products available.

One of the firm's latest innovations is the establishment of a packaging advisory department, the services of which are available free to customers.

Behind all this activity lies the restless drive of Mr. Weston—known to his employees as "Pop". He has just returned from Europe with a load of ideas, plans and new lines—all neatly packed inside his brain. He spent six months in England, Scotland,

Germany, Belgium, France, Switzerland, Holland and Denmark, renewing old business acquaintances and making new ones, as well as visiting friends and relations in his home city, Bristol. "You can't beat the personal touch," says Mr. Weston.

Among the new agencies he brought back with him are the following:

Andre Zalkin, Puteaux, France—Tube filling and closing machines, jar and bottle filling machines, labelling machines for small bottles, ampoules, boxes, etc., for use in cosmetic, pharmaceutical and food industries, labelling machines for large size bottles, cans and boxes.

Niepman Maschinenfabrik, Gevelsberg, Germany—Labelling machines, tablet unit packing machines, wrapping machines and packaging machines to suit every industry.

Ayers & Grimshaw, England—Rotary parcelling machine, for overwrapping goods packaged in small units in any type of heat-sealable material.

Jonkerheere, Belgium—Filling and weighing machines, for free-flowing and semi-free-flowing products.

Printac Ltd., England—Marking machine, which will print on P.V.C. leather, fibre, wood, cardboard, oil-skin, textiles, etc.

Pesters, Antwerp—Car locking devices for freight cars and lug-

gage vans, parcels' seals, string seals, case seals and pilfering detectors.

Van Aerden, Antwerp—Packing equipment and machinery.

It was Mr. Weston's fourth trip to Europe. Here are some of his impressions of present conditions there:

**WORK:** The Belgians and the Germans can show us how to work. I saw them working in the towns and in the fields until it got too dark to see—until 9.30 p.m. at night. You won't see that in England—and you certainly won't see it in Australia. But the average Britisher works harder than the average Australian.

**FOOD:** England is as badly off as ever for food. You are compelled to go to the shop where you are registered, and you cannot go anywhere else. And of course the human element comes into it. The shopkeeper has his likes and dislikes. If you are one of his "likes", you will be able to get a delicacy now and then, if you have the "points" for it, from under the counter. If you are one of his "dislikes", you've had it. The queues are just as long—and they wait for meat I would not give my dog. Of course, in Britain as on the Con-

tinent, you can get your ham and eggs and steak and chips—if you can afford to pay blackmarket prices. It is recognised all over the Continent that Britain saved Europe in the last war and that Britain is much the worse off for food. It gets you somehow when you visit some relatives or old friends and they say, "Oh, we can't let you go without giving you something nice", and they cook up an egg or a small piece of meat which they have kept out of their ration for you. Australians visiting home now never go calling anywhere without taking some food with them. Belgium is the best off for food. The Germans live on potatoes, bread and beer. These are fattening. I put on three-quarters of a stone!

England just does not know what refrigeration means. Of course they have only two months of warm weather there, so they don't seem to worry much about refrigerators. But the visiting Australian does not care much about the warm beer in the pubs, and it is almost impossible to get a beer off the ice.

**WAR DAMAGE:** People in Germany ask if the damage in Britain was as bad as they were told.

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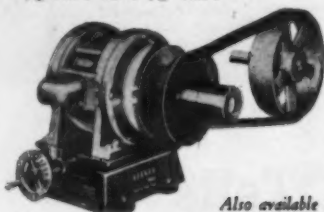
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and people in Britain ask if the damage in Germany was really much worse than in Britain. Terrible as it was in Britain, it was much worse in Germany. People are still living in holes among the rubble there. At Wuppertal, I was looking at a mass of rubbish which at one time had been a "bomb-proof" shelter. I casually tugged at a piece of twisted iron and caught a glimpse of something red. I pulled out a couple of playing-cards. They were blood-stained. It does not need much imagination to find the tragedy behind these two little bits of pasteboard. In many places in Germany they are so short of school accommodation that the children go to school in shifts. I had to get used to the school bells waking me at 6.30 a.m. They are rebuilding on both sides, but slowly. Materials are hard to get. London bomb sites are covered with a mass of wild flowers, called "London Pride". But now it is choking everything else out of existence and is creeping right through the country. It is making faster progress than the rebuilding. With the exception of a few big buildings, there did not seem to have been much done since my last visit four years ago. There's a huge building going up near Olympia, by the side of the Thames, for the 1951 Festival. A lot of people see no need for it. It's all nickel and plate-glass and light cream bricks, while people are crying out for bricks for homes. This building is to house Government departments. Many of the businesses dispersed during the war cannot get back to London because they cannot find accommodation. But some don't want to go back. One business friend of mine has a new factory, with 300 employees, in Barnstaple, a market town in Devon, and his home is a 600-year-old farmhouse. "Why should I go back to London? I like it down here," he told me.

**THE WELFARE STATE:** All the businessmen I met were against further nationalisation schemes and the Socialist programme. Lots of people coming from the Dominions on a visit home take advantage of the National Health Scheme, and get free spectacles and free false teeth. I suffer from eye trouble. Under the scheme, I saw one of the country's leading specialists. It cost me 3/-. If I had seen him privately it would have cost me 15 guineas. But I had to go through a long rigmarole to see him. First of all I had to wait for two hours to see a doctor. He gave me a personal letter from him to the specialist. With this I went along to the hospital. There I was interviewed by—

1. A porter; 2. An attendant; 3. Another porter; 4. An official whose job was to make the appointments; 5. A "new patients" clerk; 6. A girl secretary who asked full particulars; 7. An official who gave me a card and who told me where to wait; 8. A nurse who collected this card; (interval of two hours); 9. A nurse calls my name; 10. Another nurse takes

me to the consulting room; 11. The specialist; 12. After the examination, a nurse collects me; 13. The First Almoner interviews me; 14. The Second Almoner interviews me.

All this took 31 hours—and cost me 3/-. Ordinary glasses cost nothing. I found that, by paying £2, I was able to get a very heavy American lens.

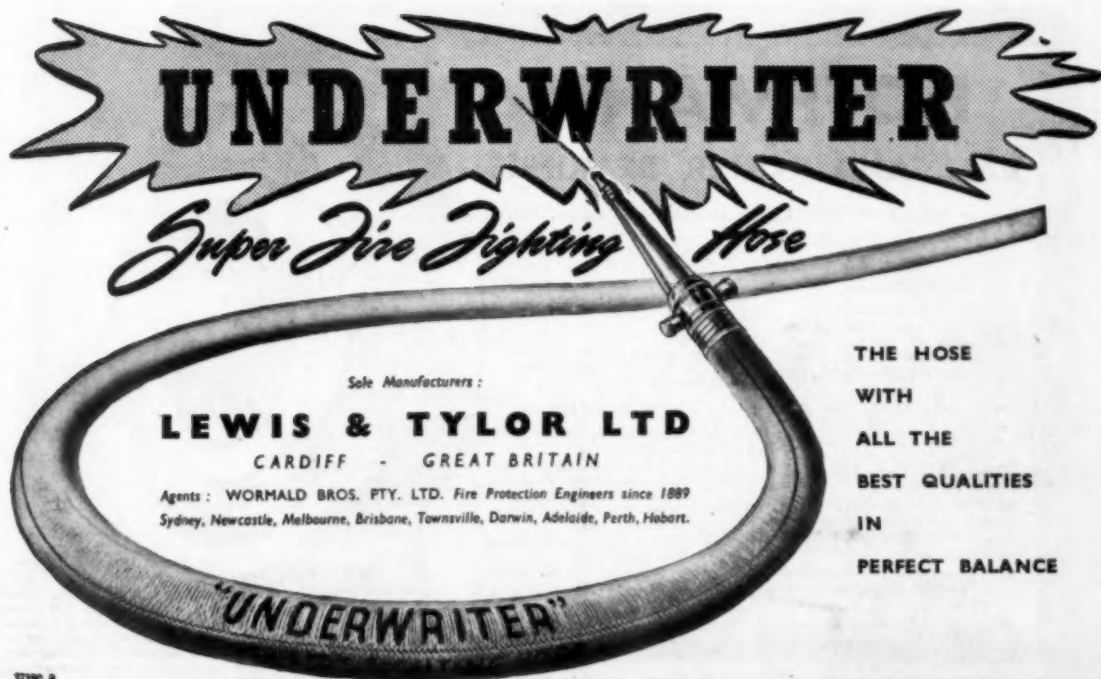
**THE GERMANS:** Superficially the Germans seem bright and cheerful, but when you mix with them and get to know them you can sense a national sadness and a national feeling of guilt. Don't get me wrong—I'm British through and through and I have no intention of defending the Germans; but I often wonder what would happen if 10,000 Communists seized Sydney, as the Nazis seized Berlin. Most of the Germans just had to follow the Nazis—or else. I saw Hitler, Hess, Goering, and the rest of the gang at the Olympic Games in Berlin in 1936, when I was there on a business trip. There was no doubting the mass hysteria, the mass faith in Hitler, which had been so cleverly and carefully built up by the Nazis' propaganda methods. But the German to-day does not really believe the stories that Hitler is still alive.

**AUSTRALIA HOUSE:** I went on the ground floor. It was heart-breaking to see how brusque and uncouth some of the minor officials were with intending British migrants. They seemed to have neither time nor inclination to answer these applicants' questions about the country. It was a case of . . . "Fill this form up. Next!" I got more incivility from the telephone girls at Australia House than I found all over the Continent in six months. They had a picture there, "Townsville, with Daydream Island in the distance." I pointed out that Daydream was 200 miles away from Townsville, and that it must be Magnetic Island they meant. They have corrected it. I know this is only a small thing, but it shows inefficiency. There is a lot of room for improvement at Australia House, though I received every courtesy and assistance from the higher officials.

### NEW REFRACTORY INDUSTRY FOR S.A.

South Australia is to add another important industry to its already impressive list. This is the manufacture of high-grade refractories, which is to be undertaken by Pascoe Industries Ltd., which was recently formed as a holding company to expand the manufacturing activities of Pascoe and Co. Ltd., combustion and general engineers and, in particular, to establish S.A. Refractories Ltd. This new subsidiary is to produce high-grade refractories and high-tension porcelain insulators. Manufacturing operations are to be carried on at the former power alcohol factory at Wallaroo.





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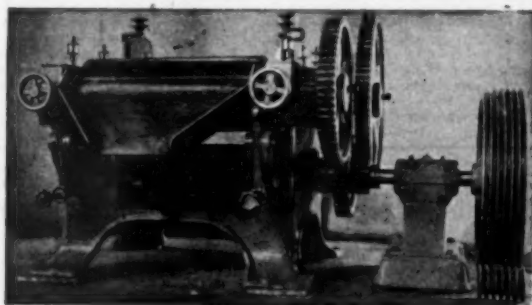
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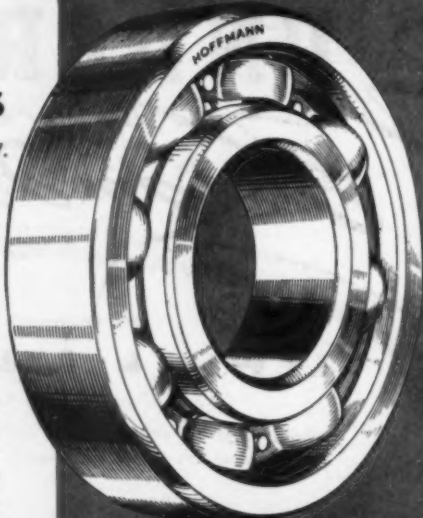
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## DEVELOPMENT AND DEFENCE.

### THE CHALLENGE OF INFLATION.

Greater military preparedness is imperative in the uncertain world situation to-day. Unfortunately it coincides with economic pressures generated by the greatest expansion of population, industrial capacity and public works that Australia has ever contemplated.

The prospect of accelerating inflation presented by these circumstances is examined in the current issue of the Bank of New South

Wales Review, and possible actions and remedies are canvassed.

Price control, with all its related panoply of restrictions and bureaucratic direction, appears to some to be the simple answer, but it offers no solution to the distortions underlying inflation.

Measures to combat inflation must be directed to the shortfall of production and the pressure of excess demand. Improved productivity in industry must be sought in higher output by labour, more effective management and more intensive mechanization. A vigorous savings campaign, too, has a real part in helping divert resources from production for

current consumption to the acclamation of capital equipment to fulfil the ambitious development programme.

The seeds of inflation lie in the attempt to do too much with inadequate resources. At the best of times a grandiose campaign of national development would impose serious strains on the economy, even without the overriding need of expanding defence preparations. In this pressing welter, developmental projects should be reviewed in order of urgency and of the prospect of adding quickly to productive resources. But above all, efforts must be concentrated on improving production of coal and

steel to provide the basis of sound expansion of industrial production and to ensure ultimate higher living standards.

### SYNTHETIC AND NATURAL FIBRES.

In another article the Review describes the developments of synthetic textile fibres over the last thirty years.

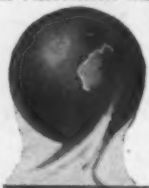
Yet consumption of the natural fibres, other than silk, has not declined, for rising world population and improved living standards have expanded the market for textiles. Although some manufactured fibres have a considerable price advantage over wool at its

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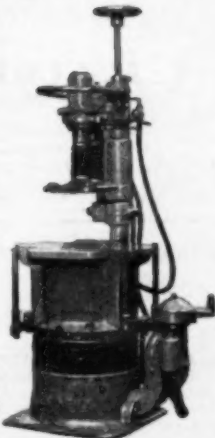
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present auction records, none has  
the versatility of wool or matches  
its special characteristics.

Some of the newer synthetics  
may offer serious competition in  
the future to the natural fibres,  
but both types may well find a  
place in expanding textile markets,  
either as individual fibres or as  
mixtures.

Elsewhere the Bank of New  
South Wales outlines economic  
trends in New Zealand. General  
trade and financial trends are  
covered in short articles, which,  
together with a regular series of  
statistics of prices, production,  
trade and banking, provide useful  
coverage of recent economic  
events.

### PROCLAIMED ELEC- TRICAL ARTICLES.

**COOKING EQUIPMENT MUST  
HAVE TESTING APPROVAL.**

Manufacturers were recently ad-  
vised that Electric Grillers with  
enclosed elements and Portable  
Electric Ranges had been pro-  
claimed in Victoria, New South  
Wales and Queensland. Also that  
it will be unlawful to sell, hire,  
etc., such articles in those States  
after 1/4/1951, unless they first  
comply with the published speci-  
fications and have been approved by  
the appropriate authority.

Manufacturers may find that in  
addition to articles generally  
known as grillers, the following ap-  
pliances may also be included:

Boiling plates, grill boilers,  
waffle irons, jaffle irons, some table  
cookers, heating portion of coffee  
percolators with detachable con-  
tainers, certain doughnut bakers,  
food trolleys, pie warmers, fish  
friers, bain maries, plate warmers,  
etc.

Manufacturers, therefore, are  
urged to clarify the position of  
their own products by communicat-  
ing in Victoria with the Electrical  
Approvals Board—MY 240 (Mr.  
Miller), or with their representa-  
tive on the Electrical Approvals  
Board, Mr. L. J. Forbes, of Nilson's  
Industries Australia Pty. Ltd., 265  
Chapel Street, Prahran, LA 4144.

It is now almost twelve months  
since the proclamation of the date  
on which these electric grillers,  
etc., was announced, and very few  
applications for testing and ap-  
proval have so far been received  
by any of the authorities. It will  
be appreciated, therefore, that  
action should be taken at once to  
submit applications for approval to  
the State authorities. It is im-  
portant to note that the sale of  
these articles in Victoria, New  
South Wales and Queensland will  
on and after the 1st April, 1951, be  
dependent upon approval having  
been obtained in those States.

Manufacturers concerned are  
asked in their own interests to  
make immediate arrangements for  
approval and testing, as further de-  
lays will result in confusion and  
inconvenience to all parties.



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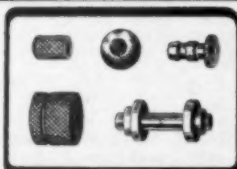
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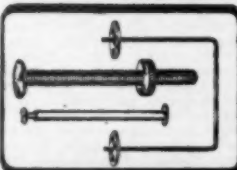
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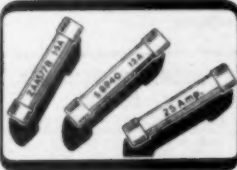
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## MACHINE TOOLS FROM ENGLAND.

EXECUTIVE TO VISIT AUSTRALIA.

Mr. J. Laurence Holt, A.M.I.Ex., A.M.I.E.E., Chairman and Managing Director of Holt, Whitney & Co. Ltd., at the age of twenty-six, probably one of Britain's youngest business leaders, is undertaking a tour of the Company's agents and customers in Australia and New Zealand early in 1951.

The activities of the H. W. Machine Tool Export Group will already be well-known to many of our readers, but in the markets Mr. Holt is visiting, the Company's name will be recognised primarily as being among the first rank of confirming houses, for it was in this capacity that relations were first established in 1902. The primary object of the visit will be to further a personal contact with many long standing friends, although it is also hoped to make important new associations.

Departure is scheduled on 6th January, 1951, via New York, Toronto, Vancouver, where brief calls will be made on the Company's main agents, arriving in the Fiji Islands for a three-day stay on the 17th January. Contact here may be made c/o K. Witherington, Esq., 2 Burns, Philip Buildings, Suva. Five weeks work throughout New Zealand will commence on the 29th January, after a week's stay in Auckland. Places to be visited include Tauranga, Gisborne, Napier, Palmerston North, Wellington, Christchurch, Timaru, Dunedin, Invercargill, Wanganui, New Plymouth and Hamilton. Contact will be maintained through R. T. Carr Ltd., P.O. Box 896, Auckland, New Zealand, until departure on the 1st March. Sydney is to be the first halt in Australia on a six weeks' tour, embracing Brisbane, Newcastle, Melbourne, Adelaide, Perth and Launceston, terminating once again in Sydney on the 18th April. The Company's main agents T. H. Bentley Pty. Ltd., 123-5 William Street, Melbourne, will be in touch with Mr. Holt for the duration of his stay.

Since the majority of travel is to be completed by air, the arrangements will be fairly flexible, but

any readers who would like to arrange Australian appointments are advised to contact T. H. Bentley Pty. Ltd. as soon as possible, when detailed information on the itinerary can be given.

## TARIFF BOARD INQUIRY.

Manufacturers are advised that the inquiry relating to the following question:—(i) Whether the growing of flax for linseed should be encouraged and, if so, whether Government assistance should be afforded to the cultivation of linseed and the production of linseed oil; and (ii) In the event that Government assistance is recommended, what form should it take? which has been held in Sydney and Melbourne and was adjourned to a date to be fixed, will now be continued in the Board's Offices, 2nd Floor, Commonwealth Offices, Treasury Gardens, Melbourne, at 10 a.m., Friday, 15th December, 1950.

It is expected that the inquiry will be closed on the termination of this hearing.

## BRITISH STANDARD MACHINERY MAKE EXCELLENT PROGRESS.

Mr. W. H. Reardon, chairman, announced at the recent annual meeting of British Standard Machinery Co. Ltd., Sydney, that demand for the company's products continues to increase both in Australia and abroad. Indeed, so insistent is the demand that work has already begun on alterations and extensions to the existing factory at Gardener's Road, Mascot, N.S.W., which will more than double the present manufacturing space.

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### RAYON INDUSTRY PREPARES FOR EXPANSION.

Rapid expansion of the rayon industry in Australia was illustrated by a recent display arranged by rayon manufacturers in the Hotel Canberra.

During the war the output of rayon material in Australia was small, and limited to war-time products. Now, however, four large rayon plants are operating in Australia, making large quantities of diversified fabrics.

A booklet issued at the display states that although rayon production throughout the world is increasing at an unprecedented rate

it does not threaten Australia's wool clip.

Rayon has almost replaced pure silk, but the booklet agrees that "there is no substitute for wool."

The present companies in Australia are concerned with the weaving of rayon fibre, which is imported. Plans have been prepared, however, for establishment of rayon yarn industry.

The booklet declares that a consumer industry must first be developed, to provide a permanent and strong outlet for the goods purchased by a yarn industry and a pulping industry.

Because of the possibility of establishing all branches of the industry in Australia, the Govern-

ment is encouraging the industry to become firmly established, the booklet states.

In time of war the industry would be able to supply Australian forces with many types of materials previously imported.

To establish the consumer market, weaving companies brought highly-skilled technicians from the United States and Canada to advise on necessary machinery and production methods.

Since the first production of printed camouflage fabrics during the war, Australian mills have developed the process until printed fabrics produced here are equal to any in the world.

Both roller and screen printing

methods are being developed, and rayon weavers claim that they will be able to meet any demand for roller printed materials up to ten million yards annually by the end of 1951.

The rayon industry is one of the most decentralised in Australia, and extends from Tasmania to northern New South Wales.

More than 90 per cent. of factories are outside capital cities, an important factor for defence purposes.

With £5 million invested in the industry in Australia, manufacturers say that they will meet a demand of 50 million yards a year by the end of 1952.



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At present, Australian production is 18 million yards per year.

This comprises more than 13 million of all-Australian fabrics and 5 million yards of imported material "printed" in Australia.

### LIFT CABLES.

The Standards Association of Australia announces the issue for public critical review and comment of a draft Australian Standards Specification for Flexible Trailing Cables for Electric Lifts (Document 160).

The Australian draft has been prepared on the basis of B.S. 977, with some variations in the light of local experience, which has indicated that some cables constructed in accordance with B.S. 977 are not found in practice to possess as much flexibility as is desirable. The draft therefore eliminates the taping construction, but provides for the more satisfactory braided construction.

Three types of lift cable have been recognised as standard: a braided type, a braided compounded type and a polychloroprene-sheathed type. A special flexibility test has also been included, this test being considered to give a true indication of the flexibility required for actual service conditions than the similar test set out in B.S. 977.

Copies of the Australian draft can be obtained from the Headquarters of the Standards Association of Australia, Science House, 157 Gloucester Street, Sydney, and from branch offices in all capital cities of the Commonwealth, and Newcastle, N.S.W., to which addresses, comments on the draft should also be sent not later than 15th December, 1950.

### KNOCK-DOWN AEROSOL SPRAYS.

Applied physics has solved a winged insect control problem.

The sprays normally used against flies, etc., have one disadvantage: they produce an immediate knock-down effect, but they settle quickly under the weight of the relatively

coarse droplets produced by ordinary equipment. Furthermore, the insecticide itself may be of low toxicity to insects, and possibly harmful to human beings.

A powerful, lasting, non-poisonous and non-inflammable insecticide technique has now been launched. Based on an American concept, it disperses the insecticide in the form of an aerosol—a discharge consisting of particles so fine that they hang in the air like invisible smoke for a considerable time.

This effective result depends on two factors. One is the insecticide itself. This is a special formulation, concentrated to nine times the potency of the standard knock-down spray, yet it will not catch fire and does not endanger human life.

The second factor is the dispersion mechanism. The insecticide is combined with a harmless propellant. The mixture is packed under low pressure into a metal container. On top is a button, pressure on which automatically emits the aerosol through a special nozzle. No pumping, no effort, no additional equipment is required.

The fine mist-spray is very economical. One or two short bursts will annihilate isolated groups of insects, and three to five seconds' spraying per 1,000 cu. ft. (28.32 cu. m.) suffices for large enclosed spaces.

### NEW FELT MILLS.

Consolidated Felt Mills Ltd. was registered in Melbourne last week with a nominal capital of £500,000.

The new company has acquired S. L. Pinkus Pty. Ltd., Montague Trading (Vic.) Pty. Ltd., and Montague Trading (Interstate).

The business has been operating for over 20 years.

Directors are S. L. Pinkus, N. B. Pinkus, M. J. Cohen, J. G. Donaldson, F. A. R. McBain and S. Dessau.

### SYDNEY FIRMS' MERGER.

Malleable Castings Ltd., makers of iron castings, and E. W. Fittings Ltd., makers of pipe fittings, have merged to form a new company, Malco Industries Ltd. Nominal capital is £1,000,000.

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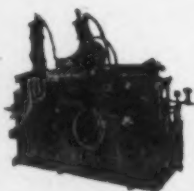
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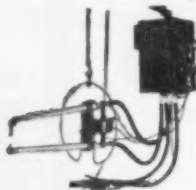
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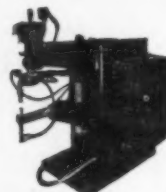
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# PATENT & TRADE MARK NEWS

Complete specifications lodged with the Patents Office are open to public inspection almost immediately after their lodgment. Interested persons are now able to obtain the details of an invention for which protection is being sought.

Provision is also made (Patents Act, 1946) for an applicant to obtain damages, if infringement occurs, from the date of publication of the application. A rule of practice has been established whereby an application will be examined more speedily when a prima facie case of alleged infringement is proved.

Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

## PATENT SPECIFICATIONS ACCEPTED

### MINING MACHINES.

138,255.—Mavor & Coulson Ltd.  
Claim 1. A mining machine of the type stated which is movable by haulage apparatus including a rope laterally offset from the plane of thrust of the shearing head and in which a support for the haulage rope transmits to the machine an inwardly directed turning moment which neutralises the skewing effect of the outward turning moment due to the off-set line of haulage.

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PATENTS, TRADE MARKS AND  
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### ELECTRON DISCHARGE DEVICE.

138,262.—Standard Telephones  
and Cables Pty. Ltd.

Claim 1. An electron discharge device comprising a source of electrons and electrode means adapted to project the electrons towards a pair of collector plates arranged, in the absence of electron deflection fields, to receive equal electron currents, and a wave guide adapted to propagate an electromagnetic field along the mean electron path with a velocity along that path substantially equal to that of the electrons, the said field having a transverse electric component with a plurality of antinodal regions along the said path to deflect alternate portions of the electron stream to either side thereof, characterised

in this, that the wave guide is loaded with dielectric about the said path to reduce the propagation velocity of the electromagnetic wave therealong.

### CYCLE ENGINE GENERATOR.

138,265.—Soc. An. Moto Garelli.

Claim 1. A generator of electrical energy for cycle engines where the drive is transmitted to the cycle wheel by means of a friction roller, characterised by the fact that the roller contains means for producing electromagnetically electric power upon rotation of the same.

### CHARGING GREASE GUNS.

138,267.—A. J. Small.

Claim 1. An improved apparatus for charging grease guns,

consisting of a container having a valve controlled reservoir slidably mounted in relation thereto, means for sliding the reservoir in relation to the container to fill the said reservoir from the said container, and means whereby a grease gun may be slidably associated with the reservoir to fill the gun from the said reservoir.

### BOND BREAKING MECHANISM.

138,268.—International Cellulotton  
Products Co.

Claim 1. A bond breaking mechanism for use in a paper sheet interlocking machine having a cutting mechanism for trans-

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WB/47

versely partially severing a pair of paper webs into a series of sheet areas having interconnecting bonds, and having a mechanism for interfolding such series of sheet areas, such bond breaking mechanism being disposed between the cutting and interfolding mechanisms and having a pair of sheet feeding and gripping rolls which in timed sequence with a pair of bond breaking rolls, effect a complete severance of the interconnecting bonds between sheet areas at the line of partial severance produced by the cutting mechanism, such pair of partially severed paper webs being continuously fed into the bond breaking mechanism in face-to-face relation with each other and with the lines of severance in one web in staggered relation to the lines of severance in the adjacent web whereby, when the moment of bond breaking occurs, there is a line of severance in each web within the distance extending from the sheet feeding and holding rolls to the bond breaking rolls.

**PRINTING TELEGRAPH  
RECEIVERS.**

138,268.—Creed and Co. Ltd.

Claim 1. Printing telegraph apparatus comprising a keyboard, a transmitter controlled by said keyboard, a page-printing telegraph receiver, means for associating the said receiver either to receive and print messages from a distant station or to print a local record of messages under control of said transmitter, and means for causing a mark of identification to be printed automatically in the margin of all messages of one kind of message to distinguish such messages from the other kind.

**AXIAL FLOW COMPRESSOR  
OR TURBINE BLADES.**

138,275.—D. Napier & Son Ltd.

Claim 1. A blade for an axial flow compressor or turbine having a root which in traverse section appears as four-sided but not rectangular and with one angle chamfered off, and in the length of the root has an undercut part constituted by a notch which extends inward from one side of the root, the notch being adapted to be engaged by a part of the member on which the blade is mounted.

**WINDSCREEN WIPER DRIVE.**

138,277.—R. C. Fitzpatrick.

Claim 1. Windscreen wiper mechanism for vehicles, adapted to drive multiple wipers and comprising a flexible two-part cable, the opposite ends of each part of the cable being respectively fixed and attached to the cranks of the wiper arm spindles, one of the cranks being attached to the sources of driving power.

**CENTRE DRILLING TOOL.**

138,276.—T. F. A. Thane.

Claim 1. A centre drilling tool comprising a detachable counter-sink, characterized in that the drill is accommodated in a longitudinally displaceable position in a corresponding bore in a tang, the lower portion of which has a

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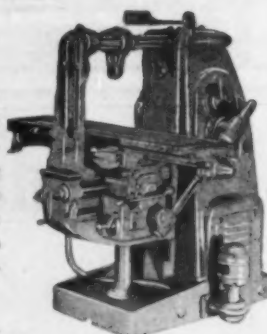
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conical external taper and is slotted longitudinally, and that the countersink, which is formed with an orifice for passing the drill therethrough, is adapted to clamp the tang resiliently around the drill with an upper portion having a conical internal surface corresponding to the conical surface of the tang.

### LATCH ACTUATING SCOURING ROLL.

138,279.—Fred Hawkes (N.V. Engineers) Ltd. and J. H. Franklin.

Claim 1. A scouring or like roll of the type herein referred to, characterised in that the movable latch member is adapted to be acted upon and withdrawn, to effect release of the hinged part of the roll, by means of a latch actuating member operable at one side of the roll.

### KILN OF TUNNEL STRUCTURE.

138,280.—Ferro Enamel Corp.

Claim 1. In apparatus of the type described, a tunnel structure including a pre-heating section, a furnace section and a cooling section, means for withdrawing gas from said pre-heating section at a point removed from the entering end thereof and directing it back into the tunnel at the entering end of the pre-heating section, and means for conveying ware through said tunnel.

Claim 10. In a tunnel kiln or the like, a tunnel structure, track extending through the tunnel structure, a car adapted to move on and be supported by said track, said car having a solid floor and a pair of downwardly and inwardly sloping surfaces of brick material extending along the sides of the car adjacent the floor and parallel to said track, said tunnel structure having a complementary pair of brick surfaces extending parallel to said track and adapted to engage said surfaces on said car with sliding contact whereby the portion of the tunnel above said car floor will be sealed from the portion below during movement of the car through the tunnel.

### TRADE MARK APPLICATIONS

93,740. "Prorex." Petroleum oils and preparations.—Vacuum Oil Company Proprietary Limited, 29 Market Street, Melbourne, Victoria.

96,777. "Prez." Zinc and alloys in which zinc predominates.—Electrolytic Zinc Company of Australasia Limited, 360 Collins Street, Melbourne, Victoria.

96,689. A label design showing, inter alia, the word "Wolf." Portable electric tools.—Wolf Electric Tools Limited, Pioneer Works, Hangar Lane, London, W.5, England.

(Turn to page 67.)

### TENDERS FOR PATENTS

#### "IMPROVEMENTS IN OR RELATING TO METHODS FOR PRODUCING PENICILLIN."

Commonwealth Patents Nos. 124,794 and 124,751. The Patentees of these inventions desire that they be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

Address inquiries to **SFRUSON & FERGUSON, Patent Attorneys, 16-18 O'Connell Street, Sydney.**

#### "IMPROVEMENTS IN MOTION PICTURE PROJECTION MACHINE."

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#### "IMPROVEMENTS IN SAFETY CONTROL APPARATUS FOR FUEL BURNERS."

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(Continued from page 66.)

96,814. "Karvac." Pneumatic cleaner for motor car.—Gemstone Plastics Pty. Ltd., 48 Nelson Street, Annandale, N.S.W.

95,165. "Homestead." Milking machines.—Alfa-Laval Separator Co. Pty. Limited, 299 Sussex Street, Sydney, N.S.W.

94,697. "Electrola." Wireless telephonic and telegraphic apparatus and parts.—Electric & Musical Industries Limited, Blyth Road, Hayes, Middlesex, England.

96,463. "Excelsior." Musical instruments.—Excelsior Accordions, Inc., 333 Sixth Avenue, New York, U.S.A.

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94,666. Design of the word "Precisionaire." Gauging instruments.—The Sheffield Corporation, 721 Springfield Street, Dayton, Ohio, U.S.A.

95,352. "Minipak." Instruments and apparatus for use as aids to hearing.—Allen & Hanbury Limited, Three Colts Lane, Bethnal Green, London, E, England.

96,756. "Huaphone." Radio speakers.—Amplion (Australasia) Pty. Limited, 36-40 Parramatta Road, Camperdown, N.S.W.

95,546. "Apex." Spark plugs.—A. J. Dawson Pty. Ltd., Cnr. Crown and Stanley Street, Sydney, N.S.W.

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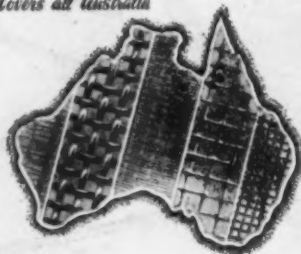
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**"A STRAP FOR A PAPER BAG."**  
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**"PLASTIC WELL SCREEN."**  
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**"VALVE MECHANISM FOR UNLOADING COMPRESSOR."**  
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**"IMPROVEMENTS IN OR RELATING TO SHOCK ABSORBING SUSPENSION DEVICES FOR VEHICLES."**

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**"IMPROVEMENTS IN OR RELATING TO THE PRODUCTION OF GAS EXPANDED RUBBER MATERIALS."**

The proprietors of Commonwealth Patent No. 124,453, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

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**"IMPROVEMENTS RELATING TO METAL WORKINGS AND LIKE PRESSES."**  
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**Aluminium Castings** (File No. C4/371/208). Stokes Foundries Pty. Ltd., £498.

**Phosphor Bronze Castings** (File No. C4/371/310). Jones & Hooke, £146/18/-.

**Aluminium Bar** (File No. C4/371/349). Stewarts & Lloyds (Australia) Pty. Ltd., £241/7/11.

**Table Tennis Tables** (File No. C4/168/89). Gulren Wood Products, £1,706/5/-.

**Trousers, Battledress** (File No. C4/252/4). H. R. Hayman, £6,710/8/4.

**Houses, Battledress** (File No. C4/252/5). H. R. Hayman, £13,273/11/3.

**Trousers, Battledress** (File No. C4/252/4). H. R. Hayman, £4,640/6/3.

**Roller Towelling** (File No. C4/238/93). Dri-Glo Towels Pty. Ltd., £168/3/9.

**Fluorescent Lighting Fittings** (File No. C4/307/273). Siemens (Aust.) Pty. Ltd., £1,419/7/3.

**Condensers** (File No. C4/316/174). H. Hecht & Co., £148/5/-.

**Axminster Body Carpet** (A/R. No. 1533). R. E. Cunningham Pty. Ltd., £329/1/3.

**Branch, Pipes, Copper** (A/R. No. 1534). Radaire Industries, £870.

**Oil Fired, Marine Type, Double Oven Galley Range** (A/R. No. 1535). Metters Ltd., £378/15/-.

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Plaster, Adhesive (A/R. No. 1536). Johnson & Johnson Pty. Ltd., £248/12/6.

Bassinettes, Steel and Wooden, with Mattresses and Pillows (A/R. No. 1537). B. C. Hancox & Co., £1,530.

Coat Hangers, with bar and screw in hook (A/R. No. 1542). Hygrade Manufacturing Co., £420.  
Mattresses, Fibre (A/R. No. 1544). Moonrise Pty. Ltd., £925/5/8.

Rotary Hoe Howard, "Junior" (A/R. No. 1546). York Motors Pty. Ltd., £210.

Paint (A/R. No. 1541). B.A.L.M. Pty. Ltd., £398/14/10; Blundell, Spence & Co. (Aust.) Pty. Ltd., £755/0/7; Taubmans Ltd., £396/17/7.

Cots, Wooden, Complete (A/R. No. 1547). Anthony Hordern & Sons Ltd., £596/17/6.

Wardrobes, Table and Sideboards (A/R. No. 1548). Murray Bros. Pty. Ltd., £280/17/-.

Coat Hangers (A/R. No. 1548). Hygrade Manufacturing Co., £787/16/-.

Chests, Dressing (A/R. No. 1548). Ogden Bros., £534/10/10.

Curtains, complete with Fittings, to be made up (A/R. No. 1549). Bye Bye Bedding Co., £7,540/11/-; Thuristane (Aust.) Pty. Ltd., £3,860.

Anchors (A/R. No. 1552). Hadfield Steel Works Ltd., £1,055.

Bandages, Plaster, in tins (A/R. No. 1569). Elliotts & Aust. Drug Pty. Ltd., £507/10/-.

Irons, Elect., "Hecla", and Urns, Elect., 4 Gallon (A/R. No. 1570). Siemens (Aust.) Pty. Ltd., £442/11/8.

"Wickman" Patent Deep Hole Drilling and Relieving Attachment, for 1 1/2 in. 5 Spindle Automatic Machine (A/R. No. 1553). McPherson's Ltd., £480.

Holists, Borthwick Electric (A/R. No. 1555). T. Alexander, Borthwick Pty. Ltd., £312.

Galv. Steel Wire Rope, various kinds (A/R. No. 1557). Aust. Wire Rope Works Pty. Ltd., £8,717/3/7.

Sugar, 1A (A/R. No. 1558). Colonial Sugar Refining Co. Ltd., £1,036/13/4.

Cabin Biscuits (A/R. No. 1559). Wm. Arnott Pty. Ltd., £1,945/16/8.

Bandages, Gauge (A/R. No. 1560). Greenhalghs Pty. Ltd., £210.

Tracing Cloth, "Claratex" (A/R. No. 1562). L. & P. Supply Co., £201.

"Atcosaythes", complete set, with Spare Gear (A/R. No. 1565). Motors Tractors Pty. Ltd., £289/18/9.

Patt. 3856 Resistances (A/R. No. 1568). R. H. Oxford & Sons Pty. Ltd., £211/2/6.

#### STORES, SUPPLY AND TENDER BOARD.

Ordinary pattern envelopes (Sch. C.T.B. 855). Redmond Inglis & Co. Pty. Ltd., £250/10/5.

Typewriters (Sch. C.T.B. 865). Office Appliances Co. Pty. Ltd., £44,840.

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Paper, for Government Printer (Sch. C.T.B. 880). Wiggins, Teape & Alex. Pirie (Export) Ltd., £5,602/16/1; Edwards Dunlop & Co., £13,733/11/2.

Electric light lamps (Sch. C.T.B. 896). A. J. Ferguson & Co. Pty. Ltd., British General Electric Co. Pty. Ltd., Australian General Electric Pty. Ltd., Philips Electrical Industries of Aust. Pty. Ltd. Rates.

Paper, for the Note Printer (Sch. C.T.B. 902). B. J. Ball Ltd., £1,201/8/9.

Super-calendered printing paper, for the Department of External Affairs (Sch. C.T.B. 905). Hermann Haage Pty. Ltd., £672/6/3.

Cheque paper (Sch. C.T.B. 907). Gordon & Gotch (A'asia) Ltd., £1,531/8/2.

Paper, for Department of Civil Aviation (Sch. C.T.B. 909). B. J. Ball Ltd., £721/8/2.

#### DEPARTMENT OF WORKS AND HOUSING.

Heating and ventilating systems, with coal-fired hot-water boiler, at the Council for Scientific and Industrial Research Organization Coal Research Section, A. Simpson, £2,515.

Steelwork, to replace timber construction of a crane gantry at No. 1 Steel Store, Lithgow Small Arms Factory. Watsford & Macgregor, £4,389.

Truck switchboard, 11 K.V., one, to Canberra. Wilson Electric Transformer, £1,960.

Metal beds, for Govt. Stores Stock, 474, at Canberra. Acme Bedstead Co. Pty. Ltd., £1,660/6/7.

Tubular steel frames, stackable chairs, 600, for Govt. Stores Stock, Canberra. Stewarts & Lloyds (A.) Pty. Ltd., £1,380.

Calorifiers, and the removal of the existing calorifiers, at Hotel Canberra. J. Sainsbury & Co., £1,105.

Dust Blower, one, and extractor, for Govt. Stores Stock, Canberra. R. Dean Clark Pty. Ltd., £215/2/-.


Rolls, 1,240, of wire netting, to various States. John Lysaght's British Works Ltd., £4,056/1/6.

Galv. chain wire, Darwin. Queensland Pastoral Supplies Pty. Ltd. Rates.

Galv. barb wire, £46; galv. barb wire, £48/15/-; galv. barb wire, £45/5/-; galv. barb wire, £46/15/-, to various States. Associated Industries. Rates.

Spun iron water pipe, 316,000, to various States. Stewarts & Lloyds (A.) Pty. Ltd. Rates.

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Stock pots, R.A.A.F. Station, Richmond. Metters Ltd., £408.

Wool dumping machine, one only, for Wool Realization Commission, Portland. Hugh Williams Engineering Works, £1,925.

Wool stacking machines, three only, for Wool Realization Commission, Portland. Toledo Berkel Pty. Ltd., £872/18/4.

Ventilation heating, and hot water service, Hobart. Gardner & Naylor Pty. Ltd., £2,732.

Boiler house access galleries, at Serum Labs, at Parkville. I. Chapple & Bros., £1,346/15/7.

Combination safes, for Dept. of Ext. Affairs, at Canberra. Bull-dog Safe Works, £249/12/6.

Table linen, for Govt. Stores Stock, Canberra. William Liddell & Co. Ltd., £418/11/3.

Steel tables, for Works Hostel, Canberra. P. W. Read Pty. Ltd., £155/5/-.

Steel nesting tables, 84, Canberra. Stewarts & Lloyds (A.) Pty. Ltd., £368/1/-.

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Metal shelving, National Library, Canberra. Steelbilt Ltd., £1,963.

Inspection tables, film, six, for

the National Library, Canberra. Berncraft Furniture Co., £279/15/-. Factory lathe, for brickworks, one, Canberra. McPhersons Ltd., £1,049/7/6.

Domestic cooking stoves, wood burning, 250, for Canberra. A. Simpson & Sons Ltd. Rates.

Pty. Ltd.; Australian Porcelain Sales & Trading Pty. Ltd. Rates.

Bare Copper Cable and Wire (Sch. 24). British Insulated Cables Ltd. Rates.

Portland Cement T. S. Nettlefold & Sons Pty. Ltd.; Australian Cement Ltd. Rates.

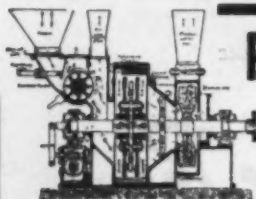
#### VICTORIA

#### GOVERNMENT RAILWAYS DEPARTMENT

Isolators and Air Break Switches (Sch. 7). Stanger & Co. Pty. Ltd. Rates.  
Porcelain Insulators, etc. (Sch. 12). Sunshine Porcelain Potteries

#### COUNTRY ROADS BOARD.

Tractors, Pneumatic Tyred, 35 h.p., 12, £14,052. Malcolm Moore Ltd.; six, £8,070. K. L. Tractor



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**PUBLIC WORKS DEPARTMENT.**

Fittings, for Birregurra. Wyett Mfg. Co. Pty. Ltd., £182.

Heating Stoves, for Toolamba West. E. L. O'Donnell, £296.

Hot Water Service, for Mental Hospital, Beechworth. Ross's Pty. Ltd., £137/10/-.

Fire Alarm System, for Ballarat Paper Mills. Automatic Fire Sprinklers Pty. Ltd., £13,922.

Heating System, for Heidelberg West School. A. J. Glenwright, £1,098.

Heating System, for Consolidated School. J. Wilson, £3,263.

Equipment, for Angliss Food Trade School. Metropolitan Gas Co., £99/1/-.

Gas Cooker, for Camberwell Girls' School. Metropolitan Gas Co., £31/10/-.

Food Bins, for Mental Hospital. Coffey Bros. Pty. Ltd., £180.

Lift, for Law Courts. Otis Elevator Co. Pty. Ltd., £3,564.

Fittings, for Princes Hill. R. B. Hallett, £89.

Rotary Clothes Hoist. J. & W. Cooper, £13/7/6.

Boller, for Janefield Mental Colony. Presha Eng. Co. Pty. Ltd., £394.

Fittings, for Chilwell. Jas. Nott & Co., £43.

Drinking Fixtures, for Murrumbidgee. Morgan & Berger, £116/10/-.

Electrical Work, for School of Mines. S. J. Czynski, £46.

Hot Water Service, for Werribee Research Farm. A. R. Whitford, £486/15/-.

Refrigerator, for Hawthorn Hostel for Women. Rickards Bros., £120.

Prefabricated Aluminium School Buildings. Overseas Corporation (A.) Ltd., £124,965.

Fittings, for Boys' High School. S. N. Lythgo, £19/10/-.

Pipework, for Mental Hospital. W. R. Davis, £1,279/10/-.

Equipment, for Mental Hospital. Brice Scale & Slicer Co., £528.

Hot Water Services, for Prefabricated Houses. P. C. Brewer, £1,590.

Refrigerators, for Heatherton Sanatorium. Rickards Bros. Pty. Ltd., £240.

Drinking Fixtures, for Warragul. Hardie Bros., £359.

Fencing, for Penridge Woollen Mill. Cyclone Co. of A. Ltd., £66.

Lift, for Heatherton Sanatorium. Johns & Waygood Ltd., £5,768.

Fluorescent Unit, for Dept. of Health. G. Wilkie Electrical Co., £49.

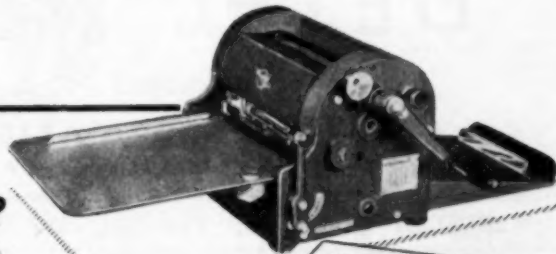
Gas Hot Water Service, for Stawell. Gas Supply Co. Ltd., £105.

Fittings, for Orbest School Building. T. A. Thaxton, £245/14/-.

Fittings, for Tech. School, Maryborough. T. Pulling, £108.

Sink Heaters, for Geelong High School. Geelong Gas Co., £43/6/-.

Inter - Communication Telephone System, for T.B. Bureau. British Automatic Telephone & Electric Pty. Ltd., £197/10/-.



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## CURRENT TENDERS

### NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

#### COMMONWEALTH

##### AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Mild Steel Water and Air Piping, 6 in. dia. to 4 in. dia. (Spec. M.34). Jan. 22.

##### DEPARTMENT OF WORKS AND HOUSING.

Bolling Pans (3), 30-gallon, for Capital Hill No. 2 Works Hostel, Canberra. Dec. 19.

Complete Refrigeration Units (3), for Cool Rooms, Puckapunyal. Dec. 5.

Complete Refrigeration Units (6), for Cool Rooms, Seymour. Dec. 5.

Counter Type Refrigerator, for Ainslie Infants' School, Canberra. Dec. 19.

Induced Draught Plant, for Concord (Quot. 211). Dec. 7.

Indoor Ring Main Units, for Electricity Supply, Canberra. Extended to Dec. 19.

Oil Storage Tanks, for Hostels, Canberra. Dec. 12.  
Outdoor High Tension Switchgear, for Electricity Supply, Canberra. Extended to Dec. 19.

##### DEPARTMENT OF CIVIL AVIATION.

Electric Propeller Fans. Dec. 19.

Headphones, for Telecommunication Equipment (Sch. 320). Jan. 23.

Switchboards, for D.M.E. Installations. Dec. 19.

##### POSTMASTER-GENERAL'S DEPARTMENT.

Attendance Books (Sch. C. 6478). Dec. 19.

Cable Jointing Pits and Covers (Sch. C.6473). Dec. 19.

Printed Forms, "Postmaster, P.M." Series (Sch. C.6478). Dec. 14.

Printed Forms, "Statistical" Series (Sch. C.6477). Dec. 19.

Record Replay Equipment (Sch. C.6469). Dec. 19.

Rubber Gloves (Sch. C.6474). Jan. 16.

Rust Preventive (Sch. C.6470). Jan. 18.

Winches and Power Take-off (Sch. C.6471). Feb. 15.

#### NEW SOUTH WALES

##### DEPARTMENT OF PUBLIC WORKS.

Bench Drills, Grinder, etc. Dec. 15.

Cast Iron Fan Mounting Plates. Dec. 8.

Electric Dish Washing Machine. Dec. 6.

Electric Food Trolleys. Dec. 6.

Electric Radiators. Dec. 8.

Heat Storage Cooker. Dec. 8.

Hot Water Urns. Dec. 8.

Kitchen Bench Scales. Dec. 6.

Mounted Diesel H.D. Crane. Dec. 13.

Portable Electric Blower. Dec. 15.

Steel—Angles and Flats, approx. 9 tons. Dec. 20.

Steel Fan Mounting Plates. Dec. 8.

Steel Filing Cabinets (2). Dec. 8.

Sucker and Blower Unit. Dec. 15.

Water Softener. Jan. 2.

##### DEPARTMENT OF SUPPLY.

Band Saws. Dec. 5.

Bookbinding Equipment. Dec. 5.

Milled or Sheet Lead and Pure Shot Nickel. Dec. 5.

Precision Surface Grinding Machine. Dec. 7.

White Hospital Blankets, 1,100. Dec. 12.

#### FORESTRY COMMISSION.

Corks. Dec. 5.

Laboratory Glassware. Dec. 5.

Laboratory Hot Plates. Dec. 5.

Panel Beaters' Tools. Dec. 5.

Petrol Soldering Irons. Dec. 5.

Rifle Cartridges. Dec. 8.

Wire Cleaning Brushes. Dec. 5.

##### GOVERNMENT RAILWAYS DEPARTMENT.

Copper, Cold Rolled (1,000 Sheets), soft finish, each 6 ft. x 3 ft. x 26 gauge, approx. weight 6½ tons. Dec. 6.

##### METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Concrete Skips, Bottom Discharge (30), 20 cub. ft. cap. (P.T. 387). Jan. 9.

Ropeway Loading Bins (2), and Supporting Steelwork, at McCann's Island (Job 2460). Dec. 19.

Steel Silo, 820 tons cap., at Waragamba Dam (Job 2453). Dec. 19.

##### STATE CONTRACTS CONTROL BOARD.

Adding/Subtracting/Listing Machine. Dec. 7.

Electric Conduit Wires and Cables. Dec. 4.

Electric Meters. Dec. 4.

Folding Chairs. Dec. 6.

(Turn to page 77.)

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## NEW TENDERS - Contd.

Mild Steel. Dec. 4.  
Motor Mowers. Dec. 5.  
Photographic Supplies. Dec. 5.  
Smoking Pipes. Dec. 5.  
Transformers. Dec. 4.  
Water Heaters. Dec. 5.

**SYDNEY COUNTY COUNCIL.**  
Metalclad Neutral Switching Equipments, 20,000 volt., for Homebush Sub-station (Spec. 1486). Jan. 18.

**SYDNEY CITY COUNCIL.**  
Steel Reinforcing Bars, approx. 34 tons. Dec. 11.

**MISCELLANEOUS.**  
New Crawler Tractors (6), 40 to 60 Drawbar Horsepower at Sea Level, powered by Diesel Engine, for Snowy Mountains Hydro-Electric Authority. Dec. 19.

## VICTORIA

**DEPARTMENT OF PUBLIC WORKS.**  
Fuel Hot-water Service, for State Schools, Gonn Crossing. Dec. 12.

♦ ♦ SEE ALSO ♦ ♦  
"LATE OPEN TENDERS"

Hot-water Services, for French Island. Dec. 5.  
Kerosene Hot-water Service, for Consolidated Schools, Red Hill. Dec. 12.  
Wireless Broadcast Receiver, together with two 7 in. Loud-Speakers, for Melbourne. Dec. 12.

**DEPARTMENT OF SUPPLY.**  
Aluminium Sheet and Strip. Dec. 5.  
Steel Combination Wardrobes. Dec. 7.

**GOVERNMENT RAILWAYS DEPARTMENT.**  
Bulkhead Watertight Fittings. Dec. 15.  
Circuit Controllers, for Point Layouts. Jan. 17.  
Lamp Fittings. Dec. 13.  
Panel Vans. Dec. 20.  
Semi-Automatic Welding Plants. Jan. 10.

**MELBOURNE HARBOUR TRUST COMMISSION.**  
Buildover. Jan. 19.  
Crawler Crane, 7½ ton. Jan. 19.  
Footpath Roller, 35-40 cwt. Jan. 19.  
Fork-lift Trucks. Jan. 19.

**MELBOURNE AND METROPOLITAN BOARD OF WORKS.**  
International Crawler Tractor, TDS5, 1938, 35 h.p. Purchase of. Dec. 5.  
Tractor, with Rotary Cutting Attachment. Dec. 19.  
Tyres and Tubes, for Motor Trucks, Graders, Cranes and Scoops. Dec. 19.

## STATE ELECTRICITY COMMISSION.

Traction Batteries (Spec. 50-51/181). Dec. 20.  
Service Entrance Cable (Spec. 50-51/185). Dec. 13.

**MISCELLANEOUS.**  
Front End Loader, for Shire of Minhamite. Dec. 7.  
Heavy Diesel Power Grader, for Shire of Bellarine. Dec. 6.

## QUEENSLAND

**BRISBANE CITY COUNCIL.**  
Circulating Water Pumps, for Tennyson Power House. Jan. 12.  
Mechanical Circulating Water Screens, for Tennyson Power House. Jan. 12.

**STATE ELECTRICITY COMMISSION.**  
Prefabricated Timber of Metal Frames Buildings (Spec. 248). Jan. 10.

**STATE STORES BOARD.**  
Bolts and Nuts, for various Government Departments (Tender A.162). Dec. 19.

**MISCELLANEOUS.**  
Switchgear, for Cairns Regional Electricity Board (Spec. L.50/17). Extended to Jan. 17.

## WEST AUSTRALIA

**GOVERNMENT TENDER BOARD.**  
Electric Pumping Equipment, for Albany. Dec. 14.  
Insulators and Hardware. Dec. 7.

## CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

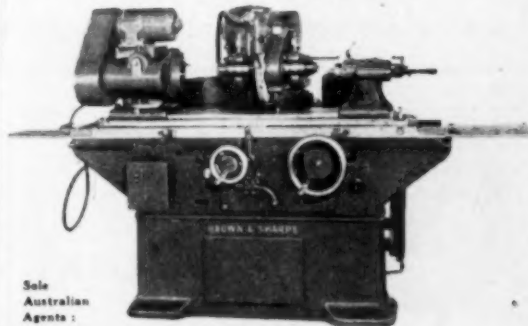
## COMMONWEALTH

**POSTMASTER-GENERAL'S DEPARTMENT.**  
B.P.O. Standard Unisector Maintenance Parts (Sch. C.6426). Jan. 16.  
Bedding (Sch. V.424). Dec. 5.  
Bimotional Switch Wiper Assemblies and Parts (Sch. C.6436). Dec. 19.  
Broadcasting Transmitters, Radio Telephone (Sch. C.6435). Dec. 14.  
Coil Winding Wire (Sch. C.6531). Dec. 19.  
Communication System between Sydney and Melbourne (Spec. C.8157). Extended to Jan. 18, 1951.  
Copper Tapes (Sch. C.6467). Dec. 14.  
Door Checks (Sch. C.6468). Dec. 5.

• (Turn to page 78.)

## BROWN & SHARPE MACHINE TOOLS

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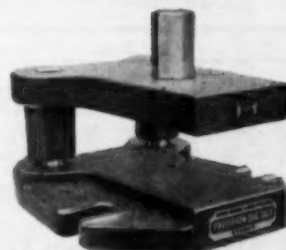


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## CURRENT TENDERS — contd.

Electrical Indicating Meters (Sch. C.6421). Dec. 12.  
High Frequency Radio Telephone Subscribers' Equipment (Sch. C.6435). Dec. 14.  
Machine Telegraph Equipment (Sch. C.6446). Dec. 5.  
Printed Forms, Costing Series (Sch. C.6472). Dec. 7.  
Protective Apparatus (Sch. C.6462). Jan. 23.  
Relay Strips and Mountings (Sch. C.6419). Dec. 7.  
Relay Sets, Two Party Subscribers' (Sch. C.6463). Dec. 5.  
Receivers and Parts (Sch. C.6296). Dec. 5.  
Resistors and Reactances (Sch. C.6437). Dec. 19.  
Road Ploughs (Sch. V.425). Dec. 5.  
Spanners (Sch. C.6434). Dec. 19.  
Sub-Station Accessories (Sch. C.6420). Dec. 7.  
Submarine Telephone Cable (Sch. C.6468). Jan. 18.  
Tools-Adjusters and Benders (Sch. C.6429). Dec. 14.  
Telephone Components (Sch. C.6442). Dec. 5.

## DEPARTMENT OF CIVIL AVIATION.

Airport Rotating Light Beacons (Sch. 307). Extended to Dec. 12.  
Dual Diversity Communication Receivers (Sch. 318). Dec. 19.  
Fuses, for Radio and Radar Equipment (Sch. 310). Jan. 18.  
Hand Tools, for Adjusting Telephone Equipment (Sch. 317). Jan. 18.  
High Intensity Approach Light Fittings (Sch. 308). Dec. 12.  
Master Time Clock Systems and Associated Slave Equipment. Jan. 30.  
Toroidal Coil Winding Machine (Sch. 319). Dec. 5.

## AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Air Compressors (2), 600 C.F.M. (Spec. M29). Dec. 11.  
Cold Cutting Saw, for Aluminium Billets, and Saw Sharpener (Spec. M32). Jan. 15.  
Grinding Media, 45 tons—Forged Steel Balls (No. M30). Dec. 18.  
Fans (16), 50,000 cub. ft. per minute (Sch. M33). Jan. 18.  
Master Clock Time System, with Attendance Recorders and Wall Clocks (Spec. E31). Dec. 18.  
Steam Driven, Direct Acting Molten Pitch Pumps (three), (No. M31). Dec. 18.

DEPARTMENT OF SUPPLY  
Radio Plant and Equipment.  
Dec. 19.

## DEPARTMENT OF WORKS AND HOUSING.

Coal Handling Plant, for Heidelberg. Dec. 19.  
Dust Extraction Ductwork, for Heidelberg. Dec. 19.  
Electrical Passenger Lifts (4), and Electric Goods Lift, for Melbourne. Dec. 12.  
Gyratory Type Fine Reduction Stone Crushing Machine, for Canberra. Dec. 12.

(Turn to page 79.)

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### CURRENT TENDERS - contd.

Dust Extraction Ductwork, for Heidelberg. Dec. 19.

High Tension Underground Cable and Joint Boxes, for Canberra. Jan. 9.

Hot Water Services, for Portsea. Dec. 19.

Kitchen Equipment (Spec. 356), for Central South Australia. Dec. 5.

Low Tension Ironclad Switchboards, for Canberra. Jan. 9.

Low Tension Underground Cable and Joint Boxes, for Canberra. Jan. 9.

Mattress Disinfecter, for Princess Juliana Hospital, Turrumurra. Dec. 5.

Metal Lathes, 41 in. (2) and Accessories, for Canberra High School. Dec. 12.

Mild Steel Kiosk Shells (6), for Electricity Supply, Canberra. Dec. 5.

Pneumatic Tyred Rollers (3), 30-40 ton, for various States. Dec. 12.

Positive Displacement Pumps, for Parkville. Dec. 5.

Prime Movers and Low Load Floats to Departmental Store, Leichhardt. Dec. 5.

Steel Door Frames and Aluminium Doors, Supply and fix, for Administrative Offices Building, Canberra. Dec. 12.

Stone Planing Machines (4), for Stone Yard, Canberra. Dec. 12.

### GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Electric Locomotives, 3 ft. 6 in. Jan. 9.

Fuel Oil. Dec. 5.

Horizontal Boring Machine. Dec. 12.

Sleeping Cars. Dec. 12.

### STORES, SUPPLY AND TENDER BOARD.

Cotton Tape (Sch. C.T.B. 916). Dec. 19.

Metal Paper Fasteners and Bulldog Clips (Sch. C.T.B. 918). Dec. 5.

Postage Stamp Paper (Sch. C.T.B. 927). Jan. 18.

Telegram Envelopes (Sch. C.T.B. 926). Dec. 7.

## STATES

### NEW SOUTH WALES

### GOVERNMENT RAILWAYS DEPARTMENT.

Air Break Isolating Switches (241), Outdoor Manually and Power Operated; current ratings, 300-1200 amperes at voltages 33 k.v. to 132 k.v. (Spec. 1270). Extended to Dec. 13.

Automatic Ash Skip Hoist and Horizontal Belt Ash Conveyors (2), for Ultimo Power Station (Spec. 1272). Jan. 17.

Axies, for Locomotives, Tenders and Carriages (Sch. 133). Dec. 31.

Bogie Louvred Vans (300), (Spec. 2211). Dec. 6.

Circulating Water Screening Plant, for Lake Macquarie Power Station (Spec. 1277). Dec. 20.

Indicating and Recording Instruments, Summation and Remote Metering Protective Relays, Regulating and Rheostat Equipment, and Current Transformers, for Lake Macquarie Power Station (Spec. 1276). Dec. 13.

Multi-cylinder Compression Ignition Oil Engines, 624 type (17), approx. 250 B.H.P., at 1,800

(Turn to page 80.)



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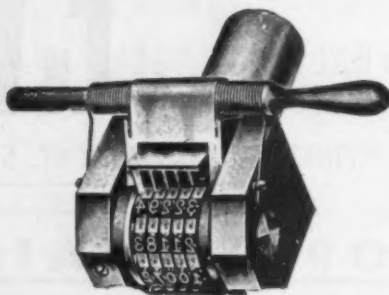
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### CURRENT TENDERS — contd.

R.P.M. and Hydraulic Torque  
Converters (Spec. 2212). Dec. 6.  
Open Face Pocket Watches  
(C.E. 6225). Dec. 5.

Overhead Wiring Equipment,  
for the Electrification of Rail-  
ways Tracks. Jan. 21.

Rolled Steel Tyres, for Locomo-  
tives, Tenders, Carriages and  
Waggons (Sch. 131). Dec. 31.

Sawdust, Annual Contract (Sch.  
146). Dec. 31.

Sump Pump, Centrifugal Type  
(C.E. 2412). Dec. 4.

Truck Weighbridges, 35-ton  
(16), with platforms 16 ft. long by  
6 ft. 6 in. wide, equipped with dial  
indicators and recording heads.  
Dec. 6.

Wood Planing and Moulding  
Machine (CE-1704). Dec. 12.

### DEPARTMENT OF PUBLIC WORKS.

Copper Sheet. Dec. 8.

Domestic Hot Water, Central  
Hot Water Heating, Steam and  
Condensate Services, for Wollon-  
gong District Hospital. Dec. 4.

Electrically Driven Pumping  
Plant, for Wacha Water Supply.  
January 22.

Electrically - driven Borehole  
Type Pumping Plant, for Coon-  
amble Water Supply. Jan. 15.

Electrically - driven Pumping  
Plant, for Dorriggo Water Supply.  
Jan. 29.

Electrically-driven Bore, for  
Mendooran Water Supply. Jan. 15.

Excavators. Dec. 8.

Food Trolley. Dec. 6.

Hacksaw Blades. Dec. 13.

Iron Machine—Two Roll, for  
Bathurst Teachers' College. Dec.  
4.

Jackhammers. Dec. 13.

Laundry Machinery, for Bath-  
urst Teachers' College. Dec. 4.

Low - Pressure Refrigerating  
Plant, for Farrer Agricultural  
School. Dec. 4.

Low-Pressure Steam and Domes-  
tic Hot-water Systems, for Farrer  
Memorial Agricultural High  
School, Neringah. Dec. 4.

Low - Pressure Refrigeration  
Plant, for Farrer Memorial Agri-  
cultural High School, Neringah.  
Dec. 4.

M.V.A. Transformers (2). 132/  
66/11 K.V. 27.5, No. E.4/59151, for  
Southern Electricity Supply. Ex-  
tended to Dec. 11.

Portable Air Compressors. Dec.  
13.

Power Hacksaw, Bandsaw, Fin-  
isher Table. Dec. 13.

Pumping Plant—Deep Well  
Type, Electrically Driven, for  
Coona Water Supply. Dec. 13.

Pumping Plant—Bore Hole  
Type, Electrically Driven, for  
Mendooran Water Supply. Jan.  
15.

Steam Heated Coppers. Dec. 6.

Steam Heated Sterilizers. Dec.  
6.

### DEPARTMENT OF ROAD TRANSPORT AND TRAM- WAYS.

Underground Cable, Multicores  
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THE AUSTRALASIAN MANUFACTURER  
[December 2, 1950, Page 81.]



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### CURRENT TENDERS — contd.

tromatic Traffic Signals (Spec. S-573). Extended to Dec. 4.

### DEPARTMENT OF SUPPLY.

Crease-resisting Grey Linen Cloth. Dec. 5.  
Electric Cable. Dec. 14.  
Scales and Weighing Appliances. Dec. 5.

### MARITIME SERVICES BOARD.

Electric Welding Machine (Portable), (Con. No. 50/51). Dec. 4.

Marine type Multi-tubular Boiler, approx. 10 ft. dia. x 10 ft. long. (Con. 50/33). Jan. 2.

Marine Type Compression Ignition Engine, for the Pilot Tender and Fire Float, Port Kembla (Con. 50/52). Dec. 4.

Marine Type, Multitubular Boiler, approx. 10 ft. dia. x 10 ft. long (Con. 50/53). Jan. 2.

Steel Roller Shutters (12), for new shed at Darling Harbour (Con. 50/48). Dec. 4.

Structural Steelwork, totalling 385.5 tons, for Shed at Pyrmont (Con. 50/42). Jan. 8.

### METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Centrifugal-type Pumping Units, electrically-driven, for Bonnyrigg Pumping Station (Con. 2451). Dec. 12.

Mild Steel Plate, approx. 2 tons of each size, 1 in. 2 in., 3 in., 4 in., and 1 in. (Quot. 8287). Dec. 11.

Vertical Spindle Centrifugal-type Sewage Pumping Units, electrically driven, for low level Pumping Station, No. 119 (Con. 2960). Dec. 12.

### STATE CONTRACTS CONTROL BOARD.

Dielectric and Induction Heaters. Dec. 5.  
Motor Generator Sets. Dec. 5.

### SYDNEY CITY COUNCIL.

Pneumatic Tyres and Tubes, for 6 monthly period, ending 30th June, 1951. Dec. 6.

### SYDNEY COUNTY COUNCIL.

Circuit Breaker Switching Equipment, low voltage, air or oil (Spec. 1456). Jan. 18.

Inter-Phone System, comprising Loud Speaking Master Station and eight Sub-stations, with all necessary accessories. Dec. 6.

Miscellaneous Mild Steel Welded Tanks, for Nos. 20 and 21 units at Pyrmont "B" Power Station (Spec. 1491). Dec. 14.

Miscellaneous Piping, for Turbo Alternators at Pyrmont "B" Power Station (Spec. 1468). Extended to Jan. 18.

Supervisory Control Equipments, for City North Sub-station and City Sub-station (Spec. 1457). Jan. 18.

Turbine Blading, for Bunnerong "A" Power Station (Spec. 1490). Dec. 7.

### MISCELLANEOUS.

Metal-Clad Switchgear, 11,000-volt, and L. T., for Clarence River County Council (Spec. 95/50). Dec. 20.

Motor Patrol Grader, approx. 20,000 lb. weight, having tandem drive, for Shire of Tomkl. Dec. 7.

Pumping Plant, deep-well type, electrically-driven, for Cooma Water Supply Augmentation (Spec. 120-49/50). Dec. 18.

(Turn to page 83.)

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### CURRENT TENDERS — contd.

Pumping Plant, electrically-driven Bore Hole Type, for Mendonran Water Supply (Spec. 114-49/50). Jan. 15.

Rotary Plough, powered with Diesel Engine, together with Auxiliary Equipment, mounted on suitable truck type Prime Mover, for Snowy Mountains Hydro-Electric Authority. Dec. 12.

Stainless Steel Sheathed Overhead Pilot Cable, for Newcastle City Council. Dec. 4.

Standard Portable Section Cleaner Equipment, for Blue Mountains City Council. Dec. 4.

Tracked Tractor, 40 h.p.; Front or Overhead Loader Attachment; Dozer Blade Attachment, for City of Tamworth. Dec. 12.

Venturi Meter, for Water Supply Piping at Tomago (Con. 696). Hunter District Water Board. Dec. 12.

### VICTORIA

#### GOVERNMENT RAILWAYS DEPARTMENT.

Bench Type Drilling Machine. Dec. 6.

Engine-driven Electric Welding Outfit. Dec. 13.

Fog Signals. Dec. 6.

Gravel Ballast loaded into trucks at Stratford. Dec. 13.

High Voltage Test Set. Dec. 13.

Knife Switches. Dec. 6.

Portable Huts, 10 ft. x 8 ft. Dec. 20.

Positive Plates. Dec. 6.

Shaping Machines. Dec. 20.

#### CITY OF MELBOURNE.

Air Circuit Breakers and Current Transformers (Spec. 740/E). Extended to Dec. 14.

Electric Passenger Lift and Electric Goods Lift, Supply of and removal of existing ones at Morton House (Spec. 744/E & 745/E). Dec. 4.

Street Lighting Lanterns (Spec. 735/E). Dec. 4.

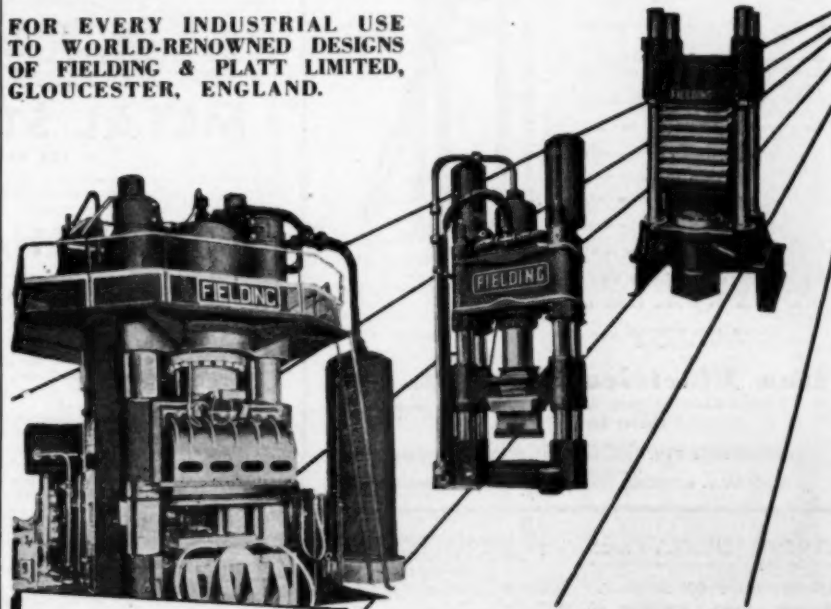
#### DEPARTMENT OF PUBLIC WORKS.

Electric Hot-water Service, for Greensborough. Dec. 12.

(Turn to page 84.)

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### CURRENT TENDERS — contd.

DEPARTMENT OF SUPPLY.  
Machine Tools, Purchase of.  
Dec. 7.  
Radio Plant and Equipment.  
Dec. 19.

### MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Hydraulically Operated Tilt and Angle Dozer Attachment to D.D.H. Tractor. Dec. 19.  
Portable Air Compressors (6). Dec. 19.

### MELBOURNE HARBOUR TRUST COMMISSION.

Mild Steel Reinforcing Rounds.  
Dec. 1.

### MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Portable Concrete Mixer (Ten-ber 1609). Dec. 18.

### POSTMASTER-GENERAL'S DEPARTMENT.

Bedding (Sch. V.424). Dec. 5.

### STATE ELECTRICITY COMMISSION.

Automatic Telephone Instruments (Spec. 50-51/176). Jan. 24.  
Coal Crushing and Screening Plant (Spec. 50-51/163). Dec. 6.  
Copper Conductors, Jointing Sleeves and Trolley Wire (Spec. 50-51/177). Dec. 11.  
Heavy Duty Scrub Clearing Machine (Spec. 50-51/178). Dec. 20.

Lathes, for Maintenance Work-shops (Spec. 50-51/173). Dec. 6.  
Metal-clad Switchgear and Accessories, 20 K.V., 25-cycle (Spec. 50-51/100). Extended to Dec. 8.  
Paper and Varnished Cambric Insulated Cable. Feb. 7.  
Plate Girder Bridges. Extended to Dec. 13.  
Switchgear and Accessories, 4,000-V. (Spec. 50-51/180). Feb. 14.  
Telephone Cable Loading Coil Assemblies (Spec. 50-51/174). Jan. 31.  
Teleprinter Machines (Spec. 50-51/119). Jan. 17.  
Toroidal Iron Dust Cores (Spec. 50-51/175). Jan. 24.  
Transformers and Spares (two), (Spec. 50-51/168). Feb. 7.

### STATE RIVERS AND WATER SUPPLY COMMISSION.

Lathe, 6-in., with electric motor drive. Dec. 12.  
Well Point De-watering Equipment, for Heyfield. Dec. 12.

### MISCELLANEOUS.

Crawler Tractor, 30-40 h.p.; Power Grader, 1, 2, or 3 yard scoop, on Rubber Wheels; Caravan, suitable road work; Trains, for Shire of Huntly. Dec. 11.  
Medium-weight Power Grader, for Shire of Benalla. Dec. 8.

Power Grader of approx. 35-h.p., for City of Nunawading. Dec. 11.  
Spun Cast-Iron or Asbestos Cement Pressure Pipes; Valves; Cast-Iron Specials, for Municipality of Fingal. Dec. 18.

### QUEENSLAND

### BRISBANE CITY COUNCIL.

All-metal Single-deck Bodies (30), for Diesel bus chassis. Dec. 8.  
Electrical Potentiometer; Four-point portable temperature recorder. Jan. 17.  
Lightning Arresters (Con. E.24/1950). Dec. 18.  
Porcelain Insulators and Hardware (Con. E.25/1950). Jan. 12.  
Salt Glazed Ware Pipes and Fittings (Con. W79/1950). Dec. 22.

### DEPARTMENT OF PUBLIC WORKS.

Crane, 15 ton, hand-operated. Dec. 18.  
Overhead Travelling Crane, hand-operated, 15-ton, for Hydro-Electric Power House, Somerset Dam. Dec. 18.

(Turn to page 85.)

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## CURRENT TENDERS—contd.

Steel Frame Windows to Admin-  
istrative Building, Charters  
Towers. Dec. 8.

IRRIGATION AND WATER  
SUPPLY COMMISSION.

Sanitary Air Compressors (2)  
only, 500 cu. ft. per minute. Dec.  
8.

STATE ELECTRICITY COM-  
MISSION.

Evaporator, for Boiler Feed  
Makeup (Spec. 250). Jan. 24.  
Main Transformers, 132, 66, 33,  
11 and 5.5 kV. (Spec. T/F2). Dec.  
13.

Oil Circuit-Breakers, 66kV, for  
Sub-Stations (Spec. 218). Feb. 21.  
Oil-Engine-driven Electrical Gen-  
erating Plant (Spec. 240). Dec. 6.  
Switchgear: (132, 66, 33, 11 &  
5 KV), Relays and Carrier Cur-  
rent Communication Equipment  
(Spec. T.F./3). Extended to Jan.  
17.

Transformers, 3 phase and single  
phase (Spec. 241). Dec. 6.  
Wood Burning Gas Producers  
(Spec. 247). Dec. 20.

STATE WORKS DEPART-  
MENT.

Steel Frame Windows, for Men-  
tal Hospital, Charters Towers.  
Dec. 6.

STATE STORES BOARD.

Structural Steel, etc. Dec. 18.

MISCELLANEOUS.

Corrugated Protected Metal  
Sheeting (Sch. 200/50). Dec. 4.

Corrugated Protected Metal  
Sheeting, for Townsville Regional  
Electricity Board (Sch. 200/50).  
Dec. 4.

Fabricated Structural Steel  
Towers (Spec. 197/50), for Towns-  
ville Regional Electricity Board.  
Dec. 4.

Pipe, 42 in. dia., 1,326 ft.;  
36 in. dia., 384 ft.; 30 in. dia., 64 ft.,  
for Toowoomba City Council. Dec.  
1.

Plan Printing Machines, for  
Cairns Regional Electricity Board  
(Con. L50/21). Jan. 23.

Switchgear, Relays and Instru-  
ments, for Cairns Regional Elec-  
tricity Board. Dec. 6.

Switchgear, 22,000 and 9,000 volt,  
for Cairns Regional Electricity  
Board (Con. L50/20). Dec. 13.

## WEST AUSTRALIA

GOVERNMENT TENDER  
BOARD.

Automatic Telephone Exchange  
(Sch. 529A). Dec. 14.

Cast Manganese Steel Railway  
Crossings. Dec. 21.

Fishplates, for the Railways  
(Sch. 808a). Dec. 21.

Mobile Crane, Wheel Mounted.  
Dec. 14.

Railway Wagon Equipment.  
Dec. 7.

Sluice Valves (Sch. 582A). Dec.  
21.

(Turn to page 86.)

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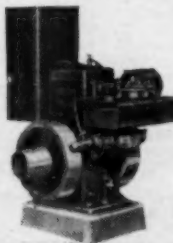
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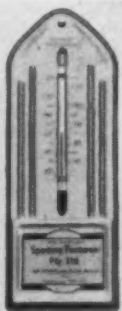
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### CURRENT TENDERS - contd.

Steam Raising Plant, for Col-  
lie Power Station. Dec. 14.  
Transformers—500 KVA and 750  
KVA (Sch. 544a). Dec. 7.  
Telephone Exchange, automatic.  
Dec. 14.  
Wheel Mounted Mobile Crane  
(Sch. 527A). Dec. 14.

### NEW ZEALAND

#### HYDRO ELECTRIC DEPART- MENT.

Auxiliary generating sets, 625  
kVA., two (Con. 169). Para. also  
Auckland, Christchurch, London,  
Paris, Washington, and Montreal.  
March 13.

Switchgear and steelwork, 110  
kV. (Con. 167, 168). Specs. also  
Auckland, Christchurch. March 6.

#### MINISTRY OF WORKS

Double drum steam winch; 5-  
ton single acting steam piling  
hammer; steam boiler; 3 in. metal-  
lic steam hose. Para. also Auck-  
land, Christchurch, Dunedin. Dec.  
5.

Radial Spillway Gates (4),  
approx. 20 ft. high by 17 ft. wide,  
of fabricated steel. Jan. 16.

### SOUTH AUSTRALIA

#### SUPPLY AND TENDER BOARD.

Crane, electric overhead travel-  
ling, 25 ton, with 5 ton auxiliary  
hoist. Dec. 11.  
Pipes, c.i., spun, 27,000 tons.  
Dec. 18.  
Steel Loco. Axles. Dec. 4.  
Structural and Plate Drilling  
Machine. Dec. 4.

### Accepted Tenders

#### POSTMASTER-GENERAL'S DEPARTMENT.

Carrier Type Cable (Sch. C-  
5032). Austral Standard Cables  
Pty. Ltd., £3,789/13/6.  
Small Size Underground Cable  
(Sch. C.5599). Austral Standard  
Cables Pty. Ltd., £299,822/4/5.  
Lead Covered Cable Switch-  
board (Sch. C.5731). Gilbert Lodge  
& Co. Ltd., £249/10/7.  
Power Rectifiers (Sch. C.5928).  
Standard Telephones & Cables  
Ltd., £394/9/-.  
Cable Jointing Pits (Sch. C-  
5795). Fraser Bros. (Industries)  
Ltd., £1,137/10/-.

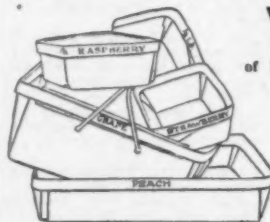
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count Series (Sch. C.6119). Lam-  
son, Paragon Ltd., £208/6/8.

Gas Pressure Alarm System  
Components (Sch. C.6042). The  
Precision Engineering Co. Pty.  
Ltd., £395/16/8.

Cable Jointing Pits (Sch. C-  
6106). Buckland Concrete Works  
Pty. Ltd. Rates.

Telegraph Instruments (Sch.  
6184). Great Northern Telegraph  
Co. Rates.

Underground Cable, 1 and 2 pair  
(Sch. C.6226). F. & G. (Carls-  
werk) Products Ltd., £25,041/5/-.

Transmitting Tubes (Sch. C-  
6121). Standard Telephones &  
Cables Pty. Ltd., £283/10/-.

Steel Plates (Sch. C.6285). Gol-  
lin & Co. Pty. Ltd., £20,775/1/1.

Spanners (Sch. C.6213). John  
Garrington & Sons Ltd., £360/10/6.

Jumpers Rings (Sch. C.6266).  
Heine Bros. (A'asia.) Pty. Ltd.,  
£4,769/2/4.

Conduits, E.W. and Concrete  
(Sch. C.6150). James Hardie &  
Co. Pty. Ltd., £41,656/5/-; Aus-  
tralia-Middle East Trading Co.,  
£88,539/11/8; Tamworth Machine  
Brick Works, £773/17/6.

Utility Motor Trucks (Sch. C-  
6258). Standard Cars Ltd.,

£92,251/8/-; Nuffield (Aust.) Pty.  
Ltd., £154,585/4/-; Lincoln Engi-  
neering Industries Pty. Ltd.,  
£5,363/8/-.

Coach Screws (Sch. C.6221). In-  
dustrial Specialty Co. Ltd.,  
£4,466/7/11.

Pneumatic Tools (Sch. C.6273).  
Knox, Schlapp Pty. Ltd.,  
£3,563/15/-.

Pneumatic Tools (Sch. C.6244).  
Knox, Schlapp Pty. Ltd., £1,215.

Electric Soldering Tools (Sch.  
C.6308). Australian General  
Electric Pty. Ltd., £3,811/7/8.

Transfers (Sch. C.6310). Ballarat  
Litho. & Printing Co. Pty. Ltd.,  
£1,087/15/8.

Variable Electronic Filter, for Re-  
search Labs. (Sch. 50/995). Spen-  
cer Kennedy Labs. Inc., 605.00  
dollars.

Portable Water Pump Units  
(Sch. C.6307). McPherson's Ltd.,  
£3,792; Cameron & Sutherland  
Ltd., £3,765.

Disc Recording Material (Sch.  
C.6369). Amalgamated Wireless  
(A'asia) Ltd., £4,110; Byer Indus-  
tries Pty. Ltd., £3,940/4/4.

Wire Armouring of Disc Cables  
(Sch. 50/1237). Austral Standard  
Cables Pty. Ltd., £775/11/1.

(Turn to page 87.)

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### Accepted Tenders—Continued

**DEPARTMENT OF WORKS AND HOUSING.**  
 Furniture, Amberley R.A.A.F. Station. Olsen & Goodchap Pty. Ltd., £4,595.  
 Standard Fitments, Thirlwell & McKenzie Ltd. Rates.

**DEPARTMENT OF CIVIL AVIATION.**  
 Modulator Units (Sch. 284). Thom & Smith Ltd., £20,187/0/4.  
 Fire Trailer Units (Sch. 289). Wormald Bros. (South) Ltd., £20,268.  
 Mechanical Side-loading Attachments (Sch. 291). A. H. Peters & Co. Pty. Ltd., £2,769/5/-.

**REPATRIATION COMMISSION.**  
 Electric Floor Polishers, Repat. Hospital, Hollywood. British General Electric Co., £413/15/8.

Sterilizer Drums, Repat. Hospital, Hollywood. Jason Industries Ltd., £236/14/-.

X-Ray Developing Equipment, Repat. Hospital, Springbank. Kodak (A'asia.) Pty. Ltd., £1,400.

Methylated Spirits, Repat. Hospital, Springbank. Thompson & Harvey Ltd., £43/16/6.

Torch Batteries, Repat. Hospital, Springbank. Australian General Electric Pty. Ltd., £15/7/6.  
 Glycerine, Toilet Soap, Soap Chips, Repat. Hospital, Springbank. J. Kitchen & Sons Pty. Ltd., £134/6/2.

Cleaners, Repat. Hospital, Springbank. Duncan Agencies, £63/19/8.

Fly Spray, Repat. Hospital, Springbank. Jasol Chemical Products Ltd., £127/15/6.

Kerosene, Repat. Hospital, Springbank. Vacuum Oil Co. Pty. Ltd., £38/10/-.

Malt Extract, Repat. Hospital, Heidelberg. Saunders Malt Extract Pty. Ltd., £58/3/3.

Ovaltine, Repat. Hospital, Heidelberg. A. Wander Ltd., £63/19/9.  
 Bournvita, Repat. Hospital, Heidelberg. Cadbury, Fry-Pascall Pty. Ltd., £40.

X-Ray Requisites, Repat. Hospital, Kodak (A'asia.) Pty. Ltd., £605/14/4.

Hospital Wheeled Equipment, Repat. Hospital, Concord. Trailer Sales & Service Pty. Ltd., £216/12/1.

Pathological Requirements, Repat. Hospital, Concord. H. H. Selby & Co. Pty. Ltd., £216/2/7.

### VICTORIA

**GOVERNMENT RAILWAYS DEPARTMENT.**  
 Electric Wash Coppers (Spec. T7701). Terrell Mfg. Co., £10/10/- each, less 5%.

Tensioning Springs (Sch. T-7739). Hendersons Federal Spring Works Ltd., £8/10/- each.

Solid Drawn Aluminium and Brass Tubes (Spec. T7730). Knox, Schlapp Pty. Ltd. Rates.

### PUBLIC WORKS DEPARTMENT.

Fittings, for Mildura High School. Lewis & Hudswell, £220.


Fittings, for Orbst High School. T. A. Thaxton, £243/14/-.

Clothes Hoist, for Yarram. H. T. Coulthard, £25.

Hyloplates, for Preston West, £23; Upwey, £28; Vermont, £27; Ormond East, £22; and Box Hill, £23.

Prefabricated School Units. A. H. Schultz & Sons Pty. Ltd., £3,243.

(Turn to page 88.)



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### Accepted Tenders—Continued

Isolating Switches and Bus-Bar Supporting Insulators (Con. 58,323). Stanger & Co. Pty. Ltd. Rates.

Road Motor Truck (Con. 58,538). Neals Motore Pty. Ltd. Rates.

Low Voltage Lamps and Accessories (Sch. 8). Eveready (Aust.) Pty. Ltd., Aust. General Electric Pty. Ltd., Siemens (Aust.) Pty. Ltd., Wm. Adams & Co. Ltd., Widdis Diamond Dry Cells Pty. Ltd. Rates.

Wire, various (Sch. 13). Rylands Bros. (Aust.) Pty. Ltd., L. B. Products, F.R.S. Ideal Spring Co. Pty. Ltd., Gerrard Wire Tying Machine Co. Pty. Ltd., Greer & Ashburner Pty. Ltd. Rates.

### Late Open Tenders

#### COMMONWEALTH

##### DEPARTMENT OF WORKS AND HOUSING.

Air Conditioning Plant, Supply and Installation, at Pearce, W.A. Dec. 5.

#### NEW SOUTH WALES

##### DEPARTMENT OF PUBLIC WORKS.

Hot Water Circulators. Dec. 8.  
Rotary Clothes Line. Dec. 8.  
Steam Heated Water Sterilizers. Dec. 8.  
Steel Filing Cabinets (2). Dec. 8.

##### DEPARTMENT OF SUPPLY.

Aircraft Parts, Purchase of, from Botany. Dec. 8.  
Machine Tools, Purchase of, from Oaklands. Dec. 7.  
Precision Surface-Grinding Machine. Dec. 7.  
Scrap Sheet Steel, Purchase of, from St. Marys. Dec. 5.  
Thimbles. Dec. 12.

##### SYDNEY CITY COUNCIL.

Kneehole Desks (14), 4 ft. 6 in. x 3 ft., with 4 or 5 drawers. Dec. 6.

##### MISCELLANEOUS.

Motor Truck, 3 to 4 tons, equipped with body of 3 cub. yd. cap. and hoist for road maintenance work, for Municipality of Maclean. Dec. 11.

#### QUEENSLAND

##### BRISBANE CITY COUNCIL.

Motor Truck Chassis, (10), 2-ton, equipped with Mechanical Hoist (Con. W83/1950). Dec. 8.  
Storage Reservoir (one million gallon), at Grovely (Con. W82/1950). Dec. 22.

(Turn to page 89.)

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### SHEFFIELD CORPORATION SHARES.

Westcott, Hazell Engineering  
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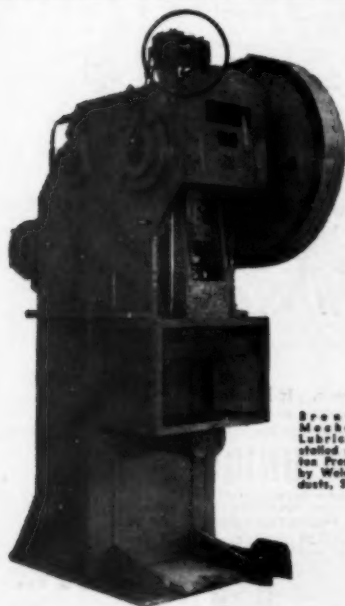
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# INDEX OF ADVERTISERS

Vol. XXXV — No. 1809 . . . December 2, 1950.

Page.		Page.		Page.	
Acme Eng. Co. ....	55	Gardner, Waern & Co. Pty. Ltd. (Front Cover)		Munro, A. J. Pty. Ltd. ....	94
Acta Ltd. ....	41	Gilbert Lodge & Co. Ltd. ....	14	Murex (A.) Pty. Ltd. ....	21
Adams & Walker ....	87	Goddard, H. G., Pty. Ltd. ....	59	New South Wales Government Railways	89
Advans Tyre & Rubber Co. Pty. Ltd. ....	82	Goninan, A. & Co. Ltd. ....	83	Nicholson & Wallbank ....	14
Alger, C. & Son ....	80	Goodall & Co. Pty. Ltd. ....	93	Nilsen Industrial Group ....	69
Aluminium Union Ltd. ....	92	Granowski, O. A. ....	80	Nolex Eng. Co. Ltd. ....	78
Amplion (A'asia.) Pty. Ltd. ....	36	Gregory Steel Products Pty. Ltd. ....	34	Norris, J. & Co. ....	40
Anchor Eng. Co. Pty. Ltd. ....	87	Grimith, Hassel & Griffith ... 64, 68, 68, 69, 70		Norton Mfg. Co. Pty. Ltd. ....	51
Apac Industries Ltd. ....	17, 40	Grozier, W. D., & Co. ....	50	Norton, Toolitt & Co. Pty. Ltd. ....	100
Artlay Mfg. Co. ....	78	Gutwirth & Son ....	78	Noyes Bros. (Melb.) Ltd. ....	73
Aston Electrical Products Pty. Ltd. ....	64	Halliday, R. H. ....	71	Orniston Rubber Co. Pty. Ltd. ....	59
Atkins, Wm. Ltd. ....	61	Hanby, J. N. ....	78	Page Eng. Co. Pty. Ltd. ....	56
Australian Berry Baskets Co. ....	86	Harrisons, Ramsay Pty. Ltd. ....	81	Parbury, Henty & Co. Pty. Ltd. ....	71
Australian General Electric Pty. Ltd. ....	18, 74	Handford, C. ....	84	Perkins (A.) Pty. Ltd. ....	61
Australian Indicators Pty. Ltd. ....	60	Hardie, J. M., & Co. ....	80	Phillips, Ormonde, Le Plastrier & Kelson	64
Australian Wire Rope Works Ltd. ....	80	Harris, Hutchinson Pty. Ltd. ....	80	Pleywood Eng. Co. Ltd. ....	23
B. S. F. Pty. Ltd. ....	78	Hart, John, Pty. Ltd. ....	88	Pneumatic Tool & Eng. Co. Pty. Ltd. ....	84
Babcock & Wilcox of Aust. Pty. Ltd. ....	35	Haysman, E. ....	80	Price, William ....	90
Baker Eng. Co. ....	44	Heine Bros. (A'asia.) Pty. Ltd. ....	94	R.V.B. Eng. Products Pty. Ltd. ....	65
Ballarat Litho. & Printing Co. Pty. Ltd. ....	80	Heine, J., & Son Pty. Ltd. ....	77	Randle Photo Engraving Co. Pty. Ltd. ....	88
Bambach, A. F., Pty. Ltd. ....	46	Hendersons Federal Spring Works Ltd. ....	81	Raymond Hydraulic Transmission Co. ....	54
Bleakley, H., & Co. (1910) Pty. Ltd. ....	85	Herbert, A. E., Pty. Ltd. ....	41	Rayson Pty. Ltd. ....	44
Bishop's Implements Pty. Ltd. ....	86	Hercules Steel Products Pty. Ltd. ....	47	Renold & Coventry Chain Co. Ltd. ....	5
Borthwick, T. A., Pty. Ltd. ....	82	Hipsleys Ltd. ....	67	Rice, F. B. ....	65
Boss Electrical Mfg. Co. ....	30	Hobson Eng. Co. ....	83	Richardson, H., Pty. Ltd. ....	89
Bradshaw Automatics Pty. Ltd. ....	76	Hodgsons Dye Agencies Pty. Ltd. ....	63	Richardson Gears Pty. Ltd. ....	11
Brenco Pty. Ltd. ....	95	Hoelle, J. J., & Co. ....	91	Robertson, C. H. ....	80
Brook Bros., J. & F., Pty. Ltd. ....	78	Hoffmann Mfg. Co. Ltd. ....	58	Rockley Machinery Co. ....	59
Brown & Dureau Ltd. ....	81	Hopkins, Odium Pty. Ltd. ....	38	Rodda, S. N., Ltd. ....	63
Eryant Bros. Pty. Ltd. ....	44	Horton, H. C. ....	10	Rubery, Owen & Kensley (Pty.) Ltd. ....	3
Bunge (Aust.) Pty. Ltd. ....	95	Hoskins Eng. & Foundry Ltd. ....	10	Samson Spray Equipment Pty. Ltd. ....	92
C. C. Die Castings Ltd. ....	99	Hughes, R., Pty. Ltd. ....	78	Sanderson Bros. & Newbould Ltd. ....	10
Carmichael, W. T., Ltd. ....	40	Independent Pneumatic Tool, Inc. ....	15	Scruttons Pty. Ltd. ....	77
Carr Fastener Co. of A. Ltd. ....	73	Industrial Plant Installations ....	96	Silicate & Dolomite Co. of Aust. Pty. Ltd. ....	65
Cartwright, O. F. ....	64	International Combustion (A'asia.) Pty. Ltd. ....	74	Smith, S. & Sons (A.) Pty. Ltd. ....	37
Cave, Arthur S. ....	65	International Radio Co. Pty. Ltd. ....	68	Smith, W. E., Eng. Pty. Ltd. ....	37
Ceelix Pty. Ltd. ....	7	Jones & Rickards Pty. Ltd. ....	42	Southern Cross Porcelain Co. Pty. Ltd. ....	54
Cheers, A. C. ....	47	Jones Bros. Coal Pty. Ltd. ....	89	Spruson & Ferguson ....	66
Churchley, R. B., Pty. Ltd. ....	68	Keeley, Wilson & Co. ....	28	Standard Chemical Co. ....	34
Clingan Bros. ....	31	Kookaburra Products Pty. Ltd. ....	31	Star Machinery Pty. Ltd. ....	57
Cohen, Geo., Sons & Co. Ltd. ....	9	Lamson, Paragon Ltd. ....	39	Steez, W. B., Pty. Ltd. ....	27
Konaghan, Robert A., & Company ....	9	Langdon, H. J., & Co. Pty. Ltd. ....	29	Stott & Underwood Pty. Ltd. ....	11
Condor Lampe (A'asia.) Pty. Ltd. ....	47	Lewis & Tylor Ltd. ....	57	Superstat Ltd. ....	28
Coventry Climax Engines Ltd. ....	97	Liberty Motors (A.) Pty. Ltd. ....	74	Swift & Company Limited ....	28
Cox & Bates ....	79	Lincoln Electric Co. (A.) Pty. Ltd. ....	53	Taylor & Wearing ....	85
Crane, G. E., & Sons Ltd. ....	51	Lindberg Foster Displays Pty. Ltd. ....	40	Thomas, R. L., Pty. Ltd. ....	67
Crossie, W. G., & Co. Pty. Ltd. ....	24	Lismore Chamber of Commerce ....	72	Thomas Optical & Scientific Co. Pty. Ltd. ....	17
Cunning, J., & Sons ....	56	Lock Tool Co. of Aust. Ltd. ....	8	Thompson & Williams ....	80
Curlewis, C. P., & Co. Pty. Ltd. ....	60	Ludowici, J. C., & Son Ltd. ....	98	Tinsley, Eliza, Pty. Ltd. ....	13
Dalhousie Air Sales Co. ....	21	Mack, M. E., & Co. Pty. Ltd. ....	65	Tool Equipment Co. Pty. Ltd. ....	38
Demco Machinery Co. Pty. Ltd. ....	41	Mackie, A. H. ....	82	Triefuss Pty. Ltd. ....	88
Diamond & Boart Products (Aust.) Pty. Ltd. ....	25	Mangrovia Belting Ltd. ....	86	Van Gelder, J. P., & Co. Pty. Ltd. ....	34
Dimet Pty. Ltd. ....	30	Manufacturers Equipment Co. ....	91	Walder, S., Pty. Ltd. ....	78
Dobbie Bros. Thermometers Pty. Ltd. ....	88	Marino Products Pty. Ltd. ....	79	Warburton, Franki Ltd. ....	45
Dominion Wire Works ....	50	Marks & Boyle ....	72	Warburton, Franki (Melb.) Ltd. ....	4
Don Donald & Co. ....	82	Marnier, Geo. W., Pty. Ltd. ....	87	Warman & Douglas ....	76
Don Electrical Co. Pty. Ltd. ....	84	Mastercraft Plastics ....	89	Watt, A. V., & Sons ....	40
Donald Eng. Co. ....	89	McKay, H. V., Massey Harris Pty. Ltd. ....	58	Waterproofing Concrete Products Ltd. ....	2
Dover Pty. Ltd. ....	67	McKinley, Fletcher Pty. Ltd. ....	43	Wells, W. H., Pty. Ltd. ....	79
Ducon Condensers Ltd. ....	12	McLellan, W. J., & Co. Pty. Ltd. ....	43	Western Barbed Wire & Nail Pty. Ltd. ....	89
Durham Chemicals (Aust.) Pty. Ltd. ....	17	McLeod, Bolton & Co. Pty. Ltd. ....	63	Wembley Eng. & Refrigerating Co. Pty. Ltd. ....	89
E. W. Fittings Limited ....	79	McOnie, G. T., & Co. ....	85	Westcott, Hazell Eng. & Steel Ltd. ....	29
Electronic Industries Imports Pty. Ltd. ....	66	Melbourne Wire Works ....	88	White, J., & Sons Pty. Ltd. ....	50
Engineering & Industrial Supplies ....	87	Merlin Industrial Electropaters ....	78	White, K. C. ....	55
Ellerker, A. J. ....	13	Metalex Pty. Ltd. ....	76	Wilbro Hardware Co. ....	60
Excelsior Supply Co. Pty. Ltd. ....	42	Miller & Co. ....	76	Winstan Metal Co. Ltd. ....	36
Exide Batteries of Aust. Pty. Ltd. ....	42	Minerals Pty. Ltd. ....	8	Witzig, P., & Co. Pty. Ltd. ....	16, 85
Extruded Metals Pty. Ltd. ....	62	Modern Tools Pty. Ltd. ....	58	Woodward & Thurston Pty. Ltd. ....	80
Farrier, E. S., & P. ....	86	Moffat, Virtue Ltd. ....	85	Woodworking & Eng. Supplies Pty. Ltd. ....	54
Foridigraph Co. (Aust.) ....	75	Monsanto Chemicals (Australia) Ltd. ....	98	Wunderlich Ltd. ....	50
G. M. F. Electric Motors Pty. Ltd. ....	52	Morris, McMahon & Co. ....	54	York Air Conditioning & Refrigeration (A'asia.) Pty. Ltd. ....	12
Gadsden, J., Pty. Ltd. ....	65				



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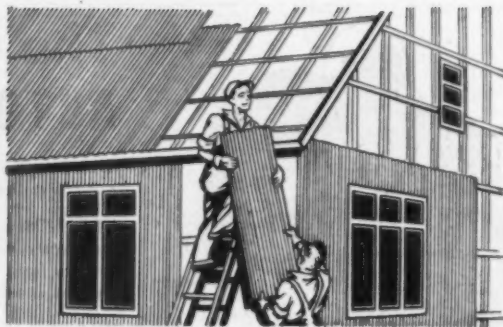
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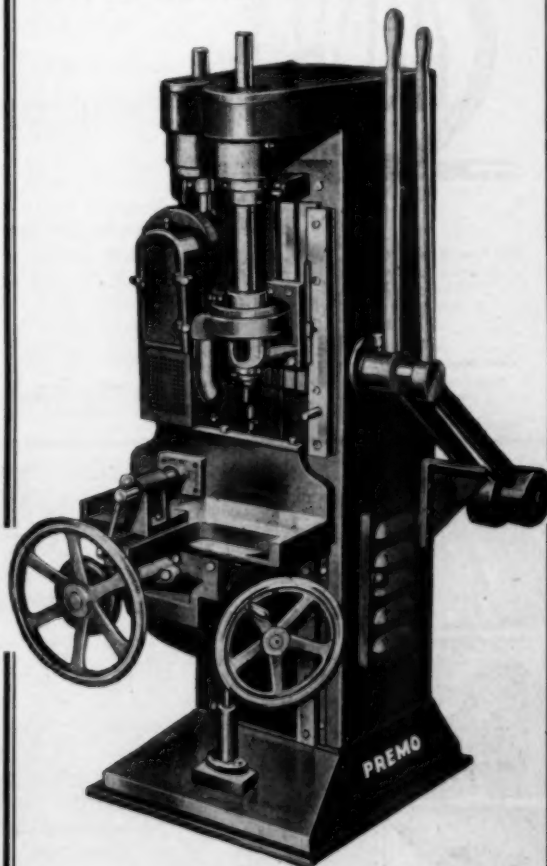
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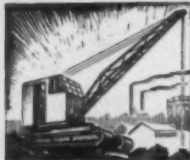
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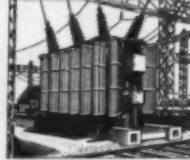
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
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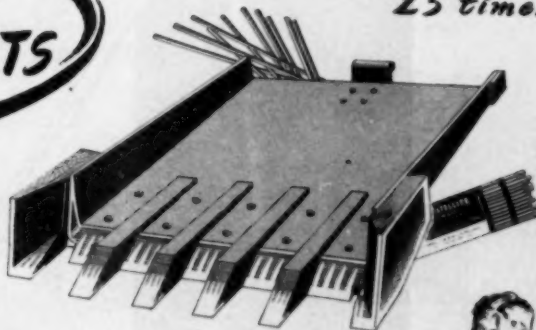
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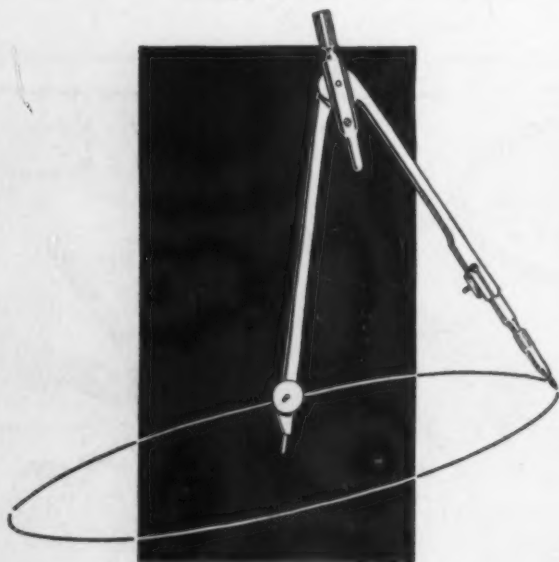
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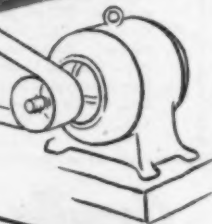
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